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MAN'S DREAMS

AND

GOD'S REALITIES.

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MAN'S DREAMS

AND

GOD'S REALITIES;

OR,

SCIENCE CORRECTING SCEPTICAL ERRORS:

BY

THOMAS RAGG,

Author of "Creation's Testimony to its God," &c., &c.

LONDON:
LONGMAN, BROWN, GREEN, LONGMANS, AND ROBERTS,
PATERNOSTER ROW.
1858.

DEDICATION,

TO THE

RIGHT REVEREND GEORGE MURRAY, D.D.,

Lord Bishop of Rochester.

My Lord—

The familiar and parental friendship which your Lordship has exhibited towards one of humble birth and lowly origin, who has no other claim upon your regard, than having endeavoured to set forth the wisdom and benevolence of HIM whose Minister you are, demand an acknowledgment beyond what I have power to offer.

I am unused to words of flattery and adulation; and were I ever so well versed in those courtly arts, I have too genuine a respect for your Lordship to make use of them in this case; but I avail myself with much pleasure of the kind permission given to dedicate to your Lordship the following pages as a memento of the gratification which your Lordship's disinterested friendship has afforded me; and which will never be effaced from my memory, so long as its tablets are unbroken.

I am, my Lord,

Your Lordship's obliged, humble Servant,

THOMAS RAGG.

PREFACE.

In the following Work, as its title will, in some degree, intimate, I have endeavoured to set forth, in a clear and popular manner, some of the principal day-dreams in which the world's "philosophers" have indulged, under the feeble light of half-awakened Science, which

"Leads to bewilder, and dazzles to blind;"

and to show how, as Science has advanced, and our knowledge become clearer, those dreams have been dissipated, and the truth has shone forth. Originally delivered in the shape of two Lectures, the style was necessarily popular: and though I have greatly enlarged, and divided the Work into Chapters, I have not thought it desirable to depart from the popular style. If any thing were needed to show that the people, and especially the devout portion of the community, are ready to accept of

Science, if presented to them in a less technical form than that in which it is usually given, the success of "Creation's Testimony" offers abundant proof. While engaged upon that Work, I had indeed my misgivings,—feeling that it might be somewhat hazardous to depart so widely from the ordinary rules of composition. It would be ingratitude to the Public, and mistrust of the *unanimous* voice of Criticism, were I to feel such misgivings now; even though I have departed still more widely, and given free wing to a Poet's ardour, while descanting on the dreams of philosophy, and the great truths which the Universe unfolds.

T. R.

90, *High Street, Birmingham,*
January, 1858.

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MAN'S DREAMS AND GOD'S REALITIES.

PART I.

SCIENCE CORRECTING SCEPTICAL ERRORS.

CHAPTER I.

INTRODUCTORY—THE TWO REVELATIONS OF DEITY.

THERE are two Books, and two only, which contain no error; and every thing that is valuable in our literature, or in the literature of any other age or nation, obtains its value from being an explanation of, or commentary upon, one or both of them. These two are the Book of Inspiration and the Book of Nature—the two Revelations of Deity—His Word and Works.

It has been the misfortune of many men, and of many ages, to confine their attention to only *one* of these; and even in some instances to regard them not only as entirely distinct, but as positively opposed to each other in their tendencies and teachings. Too timid, or too feeble, perhaps, to grasp at both, individuals, according to their taste, or the providential circumstances into which they were thrown, have usually studied exclusively either the one Book or the other, regardless of its sister's claims. And the result has been disastrous both to Science and Religion. It has checked the development of the soul's high powers. It has robbed mankind of some of the greatest sources of enjoyment in the contemplation

of the works of Nature as the production of an all-wise and all-benevolent Creator. It has engendered on the one hand negative and contracted views of the phenomena of the Universe, accompanied by a vain self-sufficiency which has looked down with supercilious contempt upon Christianity, as the mere spawn of superstition. And, unhappily, it has engendered, on the other hand, a faith which, baffled and distracted by *false* interpretations of Nature's voice, sees no safety except in closing its ears to the testimony of God's marvellous and beautiful creation; and fixing its thoughts upon the *letter* of the written Word, without daring to look elsewhere—as though *that* were the *only* truth in the Universe; and every thing else were calculated, or even *intended*, to mislead and to destroy.

It has been the lot of the Author of this Treatise to partake of *both* these feelings. Trained up, in early life, by a mistaken father, to be an opponent of Revealed Religion, and a professor of a narrow, sceptical philosophy, while admiring Nature with all a Poet's ardour, he regarded Christianity with mingled feelings of aversion and pity. Chained to the physical, he saw nothing of those great moral truths of which the outward Universe is simply a visible transcript. And when a great and mighty change came over him—when "old things passed away, and all things became new," shocked at the delusion of

his past life, he ran to the opposite extreme. He learned to believe in, and to love, the Book he had formerly rejected; but neglected that which he had previously studied; impressed by some vague, half-awakened fear that it might lead him backward from the truth he had espoused. Fond dream of wayward fancy! as though two Revelations could oppose each other, when both proceeded from ONE parent hand!

But teachers, as well as antecedents, in the Author's case misled him; and *teachers*, alas! misled *not him alone*. It was customary at that time among Christians,—though happily the custom is less prevalent in the present day,—to regard Science as a *dangerous* study—to conclude that a diligent examination of God's Works, would lead the mind away from God! Among the more enlightened of devout men, a notion appeared to be prevalent, that *every thing* in the Universe, as well as *man*, had fallen; and, therefore, that nothing in the present world was worthy of regard. And the humble and illiterate, carrying out to a greater extent the vague notions of their leaders, often regarded the very names of "the world" and "nature" with aversion; as though those words had no other signification than the limited and figurative application which is sometimes given to them in Scripture. Therefore, on every hand, was the Book of the Universe given up to the Infidel, to misinterpret and travestie at his pleasure: and the

apparent breach between the two Revelations was rendered wider!

Thanks to the Giver of all good, the Fountain-Source of all enlightenment, the *reign* of this strange delusion is past,—though its prevalence is not wholly checked. The mind, aroused from her contracted dream, no longer satisfied with a single phase or development of truth, spreads her invigorated wings and soars aloft to seek truth everywhere. Creation, Providence, the earth, the sea, the sky, join with the precepts of the *written* Word, to tell us of a Father's boundless love. Heaven's quenchless starry eyes; earth's bright and laughing flowers; the perfume-loaded breeze; the song of birds; light, dancing through the interminable expanse, and filling all things with its own warm energy; and life, that crowning act of rich benevolence, blend like the colours of the prism, to write the name of their great Author; and tell us, in the language of *the Word*, that "GOD IS LOVE." And joyous is the task, to stand as the interpreter of Nature; and shew to those who cannot read His name in these His hieroglyphs, that 't is the same the written page records, and TRUTH IS ONE.

Why should the records of Science be a sealed book to the millions of our race? The Book of the Universe, equally with the Book of Revelation is their common inheritance; and it is fitting that its

facts and results, as rapidly as they become the property of the Philosopher, should be translated into the common language for their use. The beauty and harmony, the exquisite perfection, of the laws of Nature are lost to all who have never contemplated, never heard or read of them. The thousand thousand voices in which she testifies to the wisdom and goodness of her Maker, testifies in every tone which the great diapason of the Universe encompasses, are lost to all upon whose ears their echoes have never fallen. With evidences of these great attributes of the Eternal One ever above him, around him, and beneath his feet,—evidences which he is daily trampling upon, daily consuming, daily passing by without regard, — man, too often, is utterly unconscious of their existence; because his attention has never been called to them, because the facts which give their utterances have never been brought to his notice, in a way in which he can apprehend them. But once bring his soul in harmony with the Key-note of all things, — by making it manifest that this Key-note is Love, — once impress him with the conviction that the Being he ignorantly shuns, is a Being rather to be sought — that instead of the stern Judge and the hard Task-Master, He is One whom all the facts of the Universe, *consentaneous* with the teachings of Revelation, pourtray as a God who delights in commu-

nicating happiness to the creatures He has formed, —once force upon him the conclusion, by a thousand analogies in Nature, that if rebellion against physical law inevitably brings punishment in its train, it is natural to expect from rebellion against moral law, a similar result,—and one of the greatest impediments to moral progress is at once removed.

These are the proper lessons which the outspread volume of God's Works should teach: but how different are the lessons which the Infidel has drawn. Ignorant of the Centre towards which all converge, he sees confusion where all is harmony—discord where all is concord. He clothes misguided *Reason* in a panoply of error, and bids her combat her own sister, *Faith*. He speaks of Science as the proper study of mankind; but shuns the moral lesson which she teaches—misinterpreting her language, and travestying her facts, to make them bend to his foregone conclusion. Too long, however, has the testimony of Creation been misinterpreted—too long the hand-writing of the Universe belied. Fear not, humble and retiring Christian! Come forth into the LIGHT! It shineth but to render thy faith more vigorous and joyous! COME FORTH INTO THE LIGHT! Come, see it weave a chaplet for the brow that once was crowned with thorns! Come and behold its Fountain Source in the warm heart

of Him whose heart once shed its blood in drops of agony for thee! But, oh!

Thou All-pervading, Ever-living Love!
Who shall declare Thy marvels! I have searched
Throughout the realms of matter and of mind,
And found Thee everywhere! Yet my frail sight
Has only caught a little part of Thee,
The scintillations of Thy brilliant beams,
Too bright, too dazzling, for mere mortal gaze
Oh, Love! immense, immeasurable Love!
Oh, Love! eternal, self-existent Love!
Oh, Love! creating and sustaining Love!
Oh, Love! redeeming, renovating Love!
Oh! boundless, all-assimilating Love!
Come in Thy glory! open wide the gates
Of being; purge its sinfulness away;
And in Thine own eternal fulness reign!

CHAPTER II.

THE ASTRONOMER'S DREAM.

"LIGHT is sweet!" Who hath ever watched its early dawn, now spreading the first purple tint, that heralds its approach, on heaven's dark concave—now illumining with lighter grey the clouds that await its advent—now filling with greater brilliance the exulting East,—and has not echoed in his heart those words of the pen of Inspiration—"Light is sweet!" And sweet indeed is to him who hath long wandered in darkness and disquietude, or been pent in a noisome dungeon, from which its inspiring rays have been excluded. Involved in gloom, the eye expands the elastic curtain that protects its pupil, and by aid of which it is enabled to adjust itself to all degrees of light—expands, that it may catch its faintest rays, with an instinctive, yea, passionate, longing for its more brilliant streams. But should the splendour of high noon burst all at once upon the pupil thus exposed, its effect would be momentary blindness, the temporary suspension of the power of seeing, until the eye,

"Dark with excess of light,"

recovered from the shock, and was enabled to adjust itself to the new degree of radiance. Thus has it been with mental sight; and not the least with that of the Astronomer, whose very steps are steps of light; whose eye is trained to watch its rays, and measure the inconceivable distance of their sources, as in silent grandeur, they pour in upon him from the immeasurable Universe around.

Little more than three hundred years ago, how narrow, how contracted, were man's views of the material Creation. Pythagoras, indeed, before the birth of Christ, had suggested the truth that the motion of the sun was only apparent, that appearance being caused by an axial motion of the earth. But the weight of authority, backed by Aristotle, was against him; and until near the middle of the sixteenth century, when Copernicus arose, this little planet upon which we dwell, was considered by the great mass of mankind to be the centre of the material Creation, around which the sun and moon and stars performed their daily revolution. Truth begets truth. Knowledge awakens knowledge. The great discovered fact, that the sun was the centre of a system of wandering orbs, soon suggested another and a mightier truth, that what were called the fixed stars were other suns, the centres of other systems. Observation confirmed the suggestion. The bounds of knowledge thus expanded, man's

mind expanded with them; and revelled with delight in what it now conceived to be the vast, the immeasurable Universe of God. But a too exclusive attention to the details of mechanical and mathematical philosophy—to distances, and weights, and motions, and centripetal and centrifugal forces—had tended too much to turn the Philosopher's thoughts from Him who is the Centre of forces, the great life-giving, life-sustaining Power; and thus prepared him to misinterpret the next great fact which the telescope was destined to reveal.

While observation was being specially directed to stars, and planets, and comets, phenomena of an entirely different character forced themselves into notice, assuming a vastly increased importance, through the increasing power of the instruments which were used. These were nebulous patches—spots of hazy or milky light, floating in the far abyss, apparently self-luminous islands of vapour, irregular in their figures and distribution, of all varieties of shape, and all degrees of eccentricity.

It has been truly said by the author of the "Vestiges of the Natural History of Creation," that "when our perceptive faculties are baffled, we dream:" and startled, as it were, by an apparition of the most extraordinary nature, the Astronomer, amazed, confounded, well might indulge in dreaming. "What are these newly observed

phenomena?" was the great question at issue: and man, before his observations were sufficiently matured, must seek to answer it. The answer, though a guess, and quite beside the mark, bore, for a time, very much the appearance of truth; and many concurrent circumstances seemed to corroborate it: nor did the Philosophers of that day conceive the time to be near at hand, when the splendid theories which they built upon *that* theory would all have to give way together; and

> "Like the baseless fabric of a vision,
> Leave not a wreck behind."

Such "remarkable and distant bodies, appearing more or less distinct, according to their varying distances, led Sir William Herschell to speculate on the gradual subsidence of the gaseous or elementary sidereal matter which it was [then] thought was dispersed through the regions of space. Assuming that in the progress of the subsidence, [of this imaginary matter,] local centres of condensation, subordinate to the gradual tendency, would not be wanting, he conceived that in this way, solid nuclei might arise, whose local gravitation, still farther condensing, and so absorbing, the nebulous matter, each in its own immediate neighbourhood, might ultimately become stars, and the whole nebula finally take on the state of a cluster of stars."*

* Taylor's "Indications of the Creator."

The reader has, doubtless, sometimes seen a glass or bottle of liquid, not quite transparent, into which some other ingredient has been poured, which has had the effect which we familiarly describe as "*curdling it*"—that is, has gathered the thickening particles into lumps, or patches, leaving the rest of the liquid more transparent. Thus a little milk poured into a glass of water, would render it opaque; and the addition of an acid would produce the effect described, gathering the curd, or thick part of the milk, into dots or lumps. Here we have a familiar illustration of what Sir William Herschell meant. All space was supposed to be filled with vapoury matter, which was thus, by the power of gravitation, gathered into lumps, or patches, forming solid nuclei, which, by their aggregation, or conglomeration, were metamorphosed into worlds.

"Among the multitude of nebulæ revealed by his telescopes, every stage of this process might be considered as displayed to our eyes, and in every modification of form to which the general principle might be conceived to apply. The more or less advanced stages of a nebula towards its aggregation into discrete stars, and these stars themselves towards a denser nucleus, would thus be in some sort indications of age."*

* Taylor's "Indications of the Creator."

But this was only the beginning of the dream. These speculations of the elder Herschell were followed by the nebulous theory of La Place, who suggested in his hypothesis, that the stars and planets now existing were originally in the same gaseous and distended condition as these supposed nebulous bodies; and that they had passed regularly through the various stages of advancement, or growth, necessary to prepare them for the inhabitation of animate matter: and that when in the course of this natural process, they were fitted for the great offices of life, they were left under the influence of certain physical laws, to perform their part among the innumerable and brilliant sisterhood.

"The first motion of this infant world of attenuated vapour, thrown off by laws originally stamped on matter itself, strikes the student," it is suggested, "with astonishment, barely sufficient to prepare him for the future revelations of which these early evidences of life are but feeble intimations. The changes and motions of the new born planet will be observed," continues La Place, "through innumerable centuries of time, divided only by the immeasurable periods required for the birth of other and younger planets and planetary systems. The first and eldest of the sisterhood, sweeping around the *outward* horizon," (which must naturally cool and condense the earliest,) "will be lost in

darkness to all unaided vision long before the junior members are prepared to cheer it with the warmth and gladness of the parent light."

Here, then, we have the flower full-blown—the dream developed. And now let us particularly mark what is its characteristic. *It is a Universe without God!* Man, anxious to save his Maker the *trouble* of creation, admits Him only, if he admits Him at all, as the Ordainer of certain physical laws: and aspires to teach suns, planets, comets, systems, and galaxies how to arrange themselves!

Saw ye those streaks of feeble light which shot athwart the eastern sky, making night's darkness dimly visible? What shapes and apparitions the imagination might conjure up amid the uncertainties of the *twilight* hour! Yet fair is the dawn of morning: and all the fairer for the promise that it gives of perfect day. The visions of the twilight of Science are sure to be dispersed by its clearer morning. The power of the telescope was increased. The nebulæ were observed with mightier instruments: and the dream of self-creation was dispelled. One by one, the milky spots of apparently self-luminous vapour were resolved into separate stars, until even the hazy patches in Andromeda and Orion, which for hundreds of years had shone,—enigmas in the Universe,

"Like soft white clouds in the far depths of heaven,"—

revealed themselves, not as suns, worlds, systems, in the process of formation; but as creations already. Countless multitudes of ever-shining orbs—stars, clusters, constellations, aggregations, millions of millions of suns and worlds multiplied by millions of millions—greet us now in those far abysses of space, though their inconceivable distance hid from us heretofore all but the milky stream of their commingled rays, which in that distance seemed "a soft white cloud."

Here, then, we have God's realities. Man wakes in light! The vision is no more.

CHAPTER III.

THE MECHANICAL PHILOSOPHER'S DREAM.

WONDROUS and perfect are the motions of those orbs which fill the expanded Universe. They jostle not: they damage not each other. There is no riot or confusion in their paths. Yet are there no wheels, or wheels within wheels, by which they are guided and restrained. There are no shafts, no pullies, no engirdling bands. All are controlled by an invisible, but ever-operating, law. Mechanics! It is a glorious study. Its field is long as immortality; broad as the vast Creation. Its principles are fixed—its axioms stable—its rules are unequivocal. Yet have its Students had their dreams, as wild as any which man's imagination has produced.

In the early days of philosophy, Mechanics constituted the only Science; and its principles, as has been well remarked by Dr. Macculloch,* were therefore necessarily adapted to explain every thing. It was considered by the Corpuscularians of those days, that matter was simply one substance, existing

* "Proofs and Illustrations of the Attributes of God from the Facts and Laws of the Physical Universe."

under various modifications; and those chiefly resulting from the degrees of heat, latent or ostensible, with which its atoms, or corpuscles, had become connected. This old theory has, by the discoveries of modern Chemistry, been long dispelled. It can no longer be disputed, that there are facts and phenomena in the Universe, which cannot be made to range under the dominion of merely mechanical laws. Other attractions have been discovered, besides that of gravitation—other repulsions, besides those of mere heat and centrifugal force. It is also as clearly established, that there are essential differences in physical things, which are no mere *modifications* of one primeval matter, and which light and heat, however potent their agencies, never could have produced. The sixty different *elementary* substances which we believe we have discovered in our globe, may be reduced in number, by some of them being found to be mere combinations of others; or their number may be increased by the discovery of other simple elements as yet unknown: but the vague theory of *one ultimate substance* is for ever dispelled. Chemistry, organic and inorganic, that with its decompositions and re-combinations, its never-ceasing round of benefits and changes, seems to testify to an ever-living and ever-operating Deity, has enclosed the old corpuscular hypothesis in a

sarchophagus of adamant from which it will know *no* resurrection.

Yet Mechanical Philosophy has had a later dream, not much less, if any less, mischievous in its tendency than this earlier one of its extinct predecessor. Unremitting, undeviating attention to the cold abstractions of Euclid and Aristotle—to Mechanics, Mathematics, and Geometry,—to measurements of distances and forces, and the watchful observation of undeviating laws, might, perhaps, in our present state of imperfection, be *naturally* expected to narrow the Student's views in regard to other classes of phenomena—his very attention to the LAW distracting his attention from the LEGISLATOR. Such fruit the study *has* borne; and borne it *plentifully*. And yet it was *scarcely* to be expected that a man should continue to be a Professor in the University of Oxford, when devotion to Mechanics, Mathematics, and Geometry, have led him to the conclusion, that "*Order is the* ONLY *evidence of Deity in the Universe.*"* Thrusting from His throne the God of the Bible, whose saving truths he was ordained to preach, the Reverend Sceptic offers us, in place of a living, loving, all-presiding Deity, a cold abstraction, an absorbed Buddha, or quiescent Brahma—a Being all-powerful and all-

* "Essays on the Inductive Philosophy," &c., &c., by the Rev. Baden Powell.

wise, though, haplessly, *not* all-benevolent, who made a Universe

"Beneath His power to govern and protect,"

and left it, as the ostrich leaves its egg, to chance or fate, or to the rigorous care of His Vicegerent, Law, while, heedless, He, *retired from business*, takes His quiet ease, and interferes no more.

Such, then, is the latest dream of this philosophy —the philosophy of quantities, and measurements, and forces; and how will Science answer its allegations, as it thus offers the cold shoulder to mankind?

What form was that which flitted past us with a light ethereal step, and laughed as she whispered, "'T is by me"? A veil of mist is thrown upon her shoulders. Her limbs are clothed in light: her eyes are sunbeams. Her hair is radiant with a thousand flowers, that fill the breeze with fragrance as she passes. Can aught be ubiquitous save Deity? It seems as she at once were everywhere. Earth, air, and ocean, are kindled by her presence. She fills them all with life, and joy, and animation. She paints the flowers—she regulates their odours. She tunes the songs of birds. She gives the stars their light—the sun its splendour. She wakes and satisfies the appetites of all things. She rises in the mists, and falls again in the refreshing showers. She gives the lightnings wing, and rides upon the

thunderbolt! Potent Enchantress! lend me then thine aid. Come, Chemistry! for by that name I call thee, and testify of HIM whose instrument, whose minister thou art, with voice attuned, in ever-varying cadences, to witness His benevolence—His LOVE!

Mark ye that gentle stream, that sparkles in the sunbeams as it keeps flowing onward, onward, onward, for ever? How is it supplied? The air drinks in the treasures of the ocean. Water, evaporated, becomes light enough to float in the atmosphere; and rises from the bosom of the deep. It ascends into higher regions, and is moved about by the winds, till, condensed by colder streams of air, it falls to earth again in rains, or gathers around the mountain tops in mists and vapours, which run in gentle rills into the valleys. Thus the channel of that stream is being constantly refilled, while it is as constantly returning its pellucid drops back into the bosom of the ocean. Here we see the operation of *mechanical* laws and forces. The heavier rushes downward towards the centre, under the influence of gravitation—water seeks its level.

But watch the stream more narrowly. See ye aught else? There are bubbles rising to the surface, and bursting as they reach it. Another agent, besides mechanical forces, is operating there. Gases are given off. There is decomposition. There is change. Chemistry is at work, with her

never-ceasing round of benefits, giving new motion to the inert, new life to the dead.

Watch that bright sparkling brooklet still more narrowly. There are breaks in its tiny waves. There are evidences of motion other than that by which it advances so steadily onward to the sea. Chemistry is there too — the chemistry of life. Life is there—life in multitudinous, in innumerable forms, rejoicing, basking, revelling, in the enjoyment of conscious existence.

Can it be a cold abstraction, the only evidence of whose being is the *order* of the Universe, that has filled those waters, down to creatures of infinitesimal minuteness, with forms that can live and enjoy life? Why lit He up the suns that sparkle in the interminable expanse around us? He needed not their light to guide Him in the conduct of their *orderly* revolutions. Those revolutions might have been performed with the same unerring precision, and their incidental aberrations have been counteracted by the same compensating influence, and thus the *order* of the Universe have been just as perfect, although no ray of light had ever shot athwart the interminable gloom. Yet He gave light and life to the Universe, in the aboundings of His benevolence —the overflowings of His love. He wakened the powers of Chemistry. He fed them with sunbeams. And, ever operating in this world of decay and

change, He brings, physically as well as morally, by aid of this His chosen instrument, purity out of corruption—beauty out of deformity—life out of death!

Can it be a cold abstraction, the only evidence of whose existence is supplied by *order*, who made earth's landscapes so redolent of beauty? who gave to them the charming diversity of hill and vale, and plain and woodland, and clothed them with vegetation in ten thousand lovely and ever-varying forms? A few simple principles, which might all, perhaps, have been combined in *one* form, would have been adequate to feed us; for carbon, oxygen, hydrogen, and nitrogen, form the chief bulk of animal and vegetable sustenance. And this would have been economy of resources—a favourite principle in Mechanics. Why, then, should the powers of Chemistry have been employed to produce such unceasing, such beautiful, diversity? Why, but for the overflowing benevolence of God?

And why the beauty of the animal and insect world?—the sparkling radiant plumage of the bird? Colours, chaste though gorgeous, seem as if they were endowed with life, and life that can be perpetuated for ever. These, by chemical processes, are constantly produced and re-produced, under the influence of ever-sustaining power, benevolence, and wisdom. The instrument by which they are pro-

duced is a simple tube—an artery. The material of which they are composed is blood-corpuscles; the active agent is a simple cell—a little moist bladder, so small that, even with the microscope, we scarcely can discern it. Yet, with instruments and materials such as these, are formed those gorgeous plumes which far surpass the richest attire of kings in their magnificence; and every feather, every fibre, every tint, is constantly produced and re-produced in its right position. The very stars in the peacock's tail, composed of fibres which all must unite with unerring precision to produce the effect, require such an exactness of detail for their production in separate fibres, that, even if the material were furnished, half a life might be required to calculate their places;* and yet they are always produced in full perfection by such means as I have indicated; and never vary. But *why* this gorgeousness and richness of variety? One plain, dull colour would have sufficed as well to clothe the body, and to warm the nest: and wherefore, but from God's benevolence, should the plumage of the birds have rivalled the flowers of earth, those children of the light?

But yet again! Why have the flowers such

* For an elaborate demonstration of this fact, I must refer the reader to Macculloch "On the Attributes of Deity."

beauty and such fragrance? Their petals are *needless* appendages, which Mechanical Philosophy might probably pronounce not merely unnecessary, but *useless*. The pistil and the pollen only are required for perfecting the seed and perpetuating their races. Their beauty and their fragrance are *mere redundances;* but redundances which testify to the abounding benevolence of Deity, who desired to contribute in every possible way to the pure enjoyments of His creatures, instinctive as well as rational —of bird and beast, of insect and of man!

Away then with the cold, Buddha-like idol of the Physicist, who called forth, or adumbrated from his own essence, only the *germs* of a Universe, and left his agent, "law," to work out all details and results! Away with the imperturbable abstraction, who, heedless alike of the happiness or misery of the beings he has formed, retires into quiescence, and takes note only that the wheels of "order" are kept constantly moving!

> "Bear him away
> To some *unpeopled* orb. Earth, with her tribes
> Of living creatures; man, with all his hopes,
> And fears, and cares; Nature, whose very name
> Implies her wants, while struggling into birth,
> *Demand,* PROCLAIM—A LIVING, PRESENT GOD!"

CHAPTER IV.

THE CHEMIST'S DREAM.

"ROUND about the cauldron go;
In the poisoned entrails throw;
Toad, that under the cold stone,
Days and nights hast, thirty one,
Sweltered venom sleeping got;
Boil them first i' the charmëd pot.

* * * *

"Fillet of a fenny snake,
In the cauldron boil and bake;
Eye of newt, and toe of frog;
Wool of bat, and tongue of dog;
Adder's fork, and blind-worm's sting;
Lizard's leg, and owlet's wing;
For a charm of powerful trouble,
Like a hell-broth boil and bubble.

* * * *

"Scale of dragon; tooth of wolf:
Witch's mummy; maw and gulf
Of the ravined salt-sea shark;
Root of hemlock, digged i' the dark;
Liver of blaspheming Jew;
Gall of goat, and slips of yew,
Silvered in the moon's eclipse;
Nose of Turk, and Tartar's lips.

* * * *

"Add thereto a tiger's chawdron,
For the ingredients of our cauldron:
Double, double toil and trouble;
Fire burn, and cauldron bubble:
Cool it with a baboon's blood,
Then the charm is firm and good."

Such was the picture drawn nearly three hundred years ago of the Chemist's dream, by one who was perhaps the greatest genius which the race of man has ever yet produced. And this must not be regarded as a caricature, but rather as the embodiment of vague notions prevalent in his days, and in the days preceding. Then, almost every thing connected with Chemistry was mere conjecture. Man was in ignorance of the principles of matter, and unacquainted with the processes of analysis, decomposition, and combination. Now how changed! The labours of a Davy, a Dalton, a Faraday, and a hundred others of like mind, and like indefatigable industry, have thrown light upon darkness, and resolved chaos into order.

Yet the *modern* Chemist also has had his dreams —though resulting chiefly, it is true, from attempts to make the facts of his Science square with the theories of others: and his great dream must now engage our attention.

Scepticism exhibits a very Protean capacity. It can assume all shapes—misinterpret all Sciences—

travestie all truths: and even Chemistry has not escaped without its brand. When the nebular hypothesis, considered in our second Chapter, was propounded, and men of Science caught, or thought they caught, a glimpse of the origin of all things, efforts were at once commenced to make Chemistry quadrate with the dream. Ever since she had cast aside the wild chimeras of the Alchemists, and confined herself to Baconian rules, she had dealt in *facts*, and rapidly multiplied those facts; but now was the time for *theories;* and she proceeded at once to generalize, before her facts were sufficiently matured, or sufficiently abundant, for sound induction. It was evident that *certain substances*, as water for example, could exist in the three forms of vapour, liquid, and solid. The nebular hypothesis required that *all things* should at one time have existed in a vapourous state — expanded by heat, which has since radiated into space; and, without farther evidence, Chemists at once leaped to the conclusion, that all things* *could* exist under the

* Perhaps after all the error may consist chiefly in the use of the *definite* article. There are so many tri-unities in nature, that I should hesitate to pronounce it impossible for all things to exist under three several conditions, if they cannot exist under *the* three specified. At the meeting of the British Association in Dublin, in 1857, the Chairman called attention to the fact, brought to light by MM. Wohler and Deville, that *silicon* and *boron* would each exist in three several conditions analagous to the three known states of carbon, — *charcoal, graphite*, and *diamond*,—to which they are thus closely allied.

three specified forms of being,—vapour, liquid, and solid,—provided we were capable of inducing the necessary conditions—of increasing our heat, or intensifying our cold. This was the Chemist's dream; and is still his dream. And now let us see what objections facts, which are God's realities, have to offer to its details.

The old one-substance theory of the Corpuscularians appears to have left its impress on this wild conjecture; for the Chemist, in admitting it, really places in abeyance his certain knowledge of the vast difference between those materials in which his Science deals. And first, let us distinctly bear in mind, that, at present, it is *mere* conjecture; and has but a very few isolated facts in the Universe to support it. The most familiar instance of a substance which is discovered to exist in the three specified states is that I have already named—*water*. But water is not an element, but a compound. It is a chemical combination of two gases,—hydrogen and oxygen,—which never, I believe, in their simple purity, have been discovered in a solid, or even in a liquid, state. And, strictly speaking, this does not fulfil the necessary conditions of an entire nebulous state, which really requires that all the elements of the world, in their first uncombined condition, should be capable of existing as gas.

La Place, though an Astronomer and Mathema-

tician of the highest rank, was no Chemist. Had he been as well acquainted with the laws of Chemistry as with those of centrifugal and centripetal force, or as capable of analysing material compounds, as he was of resolving algebraical problems, then, in all probability, the Vestigian and Powellian systems of development would never have been born. They were generated by, or based upon, his nebular hypothesis. That nebular hypothesis he built upon newly-discovered sidereal phenomena, the nature of which was wholly mistaken; and built it in utter unconsciousness of its being directly contradictory to physical facts. The Chemists should have corrected him, without waiting for the telescope to make his error manifest. But instead of this, they bowed to his authority; and endeavoured to make the *facts* of their Science quadrate with the *fancies* of his. Hence arose their dream. The nebular hypothesis, which we have already seen exploded, supposes that the materials of which the solar Universe is composed, originally existed in a sort of fire-mist, or vapour, filling the whole area enclosed by the outermost planet. The Chemist's dream is the convertibility of *every thing* into either solids, liquids, or gases, which is necessary to make this nebulous state of existence *possible*. And now let us go somewhat into detail, in order to ascertain what *facts*, which are God's realities, testify concerning it.

Oxygen, hydrogen, nitrogen, and other elements of the same genus, being gaseous in their nature, whenever they obtain, by combination, a liquid or solid condition, can readily, by the proper agencies, be restored to a gaseous state again. But this is no proof that the other elements with which, in this and other worlds, they are combined, and in combination with which they assume this liquid or solid condition, can also be resolved into vapour. And before the nebulizing Philosopher has any right to ask our credence for his dream, we are legitimately entitled to demand that he show us, if not the *feasibility*, at least the *possibility*, of *such* a state of things.

Carbon, sulphur, phosphorus, and a few other elements of kindred character, have so strong an affinity for oxygen, that they readily enter into combination with it as carbonic, sulphurous, or phosphoric, acid. But their thus existing as gas does not make a quantity of new gas, or increase the quantity in existence. They only use up and occupy a part of the oxygen which our atmosphere contains.

Iron, copper, brass, and several other metals, both pure and alloyed, have, perhaps, as strong an affinity for oxygen; but in an entirely different condition. They are not taken up into combination by oxygen as gaseous acids, but take up the oxygen

into combination with themselves, in the shape of solid oxides, represented by the familiar examples of verdigris and rust.*

Iodine is an example of a simple element, and zinc of a simple metal, which can exist as such in the three specified conditions. It is stated, also, that copper has been vapourised, in which case it forms a second metal of the class; but scarcely another simple element in nature can be added to the catalogue.

In physics, it is a simple truism, that what has been may be, and what cannot be has not been. Let us endeavour to ascertain then the bearing of this truism upon the question in dispute.

* These peculiar and essential properties of the elementary bodies, however unimportant some of them may seem in themselves, are absolutely necessary to the continued harmonious workings of all things. I will cite one example. "CARBON," says Faraday, ("Letters on Non-Metallic Elements,") "possesses every quality to render it adapted to its intended uses; not one property, however seemingly unimportant, could be added or taken away, without destroying the whole harmonious scheme of nature, devised with such wisdom, maintained with such care" "CARBON," remark Drs. Dickie and Mc Cosh, ("Typical Forms and Special Ends in Creation,") "is a main source to us of artificial light and heat. In order that it should fulfil this end, it is necessary that it should be a solid while evolving its light and heat, (a gas has little, and this only a momentary, power of illumination;) this is provided for by carbon being in itself always solid. But if the result of combustion had been also a solid, then the world would have been buried in its own ashes: this evil is avoided by the carbon going off in carbonic acid, which is volatile. The mass is all glowing one instant, the next it is dissipated into air.

It is perfectly conceivable, that, as water is composed of two gases,—oxygen and hydrogen,—all the waters that float upon the surface of the earth might (save and except the matters they hold in solution) be resolved, by decomposition, into their separate elements, and float far away beyond earth's surface.

It is perfectly conceivable, that, as coal is composed chiefly of carbon and hydrogen, all the coal that is hidden in the bowels of the earth might, by combustion, be resolved into a gaseous condition,—save and except the little earthy or metallic ash which it would leave behind,—and, enlarging the bounds of our atmosphere, float away as hydrogen and carbonic acid.

It is perfectly conceivable, that, as graphite and diamonds are only carbon, all the graphite, and every diamond, that the earth contains, might also be resolved into the same gaseous or vapoury condition.

It is perfectly conceivable, that, as all animals and vegetables are chiefly composed of carbon, oxygen, hydrogen, and nitrogen, so, with the exception of a similar sediment to that which coal would leave, every animal and vegetable that lives, moves, or grows upon the surface of the earth, or in its seas, might also be resolved into a gaseous condition.

We should thus prodigiously increase the dimensions of our atmospheric envelope, alarming, perhaps, by its contiguity, the inhabitants (if it have any) of that lunar companion of our globe with which ill-natured Critics suggest that the nebularizing Philosophers have considerable connection. And here we may, perhaps, as well stop to consider the secondary effects of what we have admitted, and take a note of the fact, that, in all probability, all the oxygen which air and water could muster, might scarcely suffice to take up in combination *half* the carbon, sulphur, phosphorus, &c., which we have kindly bestowed upon it in accordance with the insatiable "Philosopher's" desire—leaving none for the poor metals to combine with, if they could even be persuaded to dissolve into gas.

But we will go even farther than this.

It is perfectly conceivable, that our sea sands, and mountains of flint and sandstone, which are but oxides of silicon, might be made, by intense heat or other agencies, to give up the oxygen they contain,—our mountains of chalk, marble, limestone, &c., to give up their oxygen and carbon,—that all explosive materials might be forced to yield up their chlorine, hydrogen, and nitrogen,—metallic ores to free the carbon and oxygen they hold in combination. It is conceivable, in fine, that every oxide and chloride, every carbonate, hydrate, and nitrate, every

phosphate and sulphuret, *et oc genus omne*, while this great demand for gas existed in the Theorist's market, might be made to give up every particle it contained, to swell this widely extended nebulous apparition.

But if we allow all this to be possible, yea, even if we consider it as a fact accomplished, the real difficulty is not yet touched; the real work is not commenced. What is to be done with the remainder of the earth's contents? By what means are we to vapourise the earthy and metallic bases which remain; and are, for the most part, all the more solid for the absence of those gases which they have yielded up to the Nebulizer's demand? How, for example, are we to turn silicon, calcium, aluminium, platinum, irridium, iron, gold, or silver, into gas; and send them to contribute, by indefinite extension, to the dimensions of this nebulous haze?

Because it is a well known fact that zinc may be vapourised, and our manufacturers have sometimes a difficulty in retaining it when brass is melted up for use, certain Theorists contend, that *every* metal must be subject to similar conditions. As well might they contend, because potassium will ignite when thrown upon water, that every other metal will do the same. Each metal has its own peculiar properties, as well as those of which it partakes in common with the rest. Talk they of vapourising

iron? Let them present the world with a specimen of iron vapour, or even of ferruginous acid gas!* Such stubborn facts will have more weight than a thousand theories!

Awkward and unpliable as an incontrovertible *fact* which stands in the way of some very plausible *theory*, and will neither bend nor be kicked out of the road, silicon, the base of flint and sand, when brought into a pure condition, and separated from other elements, stubbornly refuses even to be fused or melted; and in spite of all the heat that can be brought to bear upon it, remains as a brown powder. Irridium, one of the metals, seems also to have taken upon itself the same unyielding determination. Why, a dose of such intractible stuff as either of these, if properly administered, would have stifled this Sceptical theory at its birth!

Most of the metals may be fused and liquidised by heat; but if the heat be intensified, for the purpose of turning them into vapour, instead of doing this, it will only render the metal purer, by casting out all foreign matter which it holds in combination. Or even were it possible by such a process to put them into a gaseous condition, by what means is the whole area enclosed by the orbit

* It is a commonly observed fact, that iron will *waste* in the fire: but I hold that the product of this waste should be sought for rather in the ashes than the atmosphere.

of the planet Neptune to be brought into so hot a state—inconceivably hotter than the fiercest blast-furnace man has ever been able to produce! A precious bonfire, to light our dreaming Nebulists on their way!

Metals may, also, by the aid of certain acids or other agents, be placed in solution in water: as is done for the purpose of electroplating. But if that water be evaporated, or resolved into its component gases, the metals would be deposited and remain,—plain substantial facts, when the rest was turned to vapour, they would still be there,—God's realities, to prove, like silicon, the *un*reality of the Chemist's dream!

How, then, I again ask, *are* the metallic and earthy bases to be vapourised? Under what conditions can they *possibly* exist in a nebulous state? And until the "Inductive Philosopher" can resolve this problem, he has no right or title whatever to demand our credence to the nebulous foundation of his development chimera.*

* Strictly speaking, we may make a much larger demand upon the Inductive Philosopher. If it be the product of the cooling down of *one* vapourous mass, the whole of the Solar System ought to be composed of similar materials. And this applies with greatly increased force to those bodies which are nearest to each other. And yet the meteoric stones, which are supposed to be extra-telluric, are never found to contain oxygen—one of the most abundant, and by far the most important, element which the earth possesses. Nor have we yet any valid reason to suppose that oxygen is to be found in our nearest

Till this answer be given, we have a perfect right to ask some *proof* of the *possibility* of the suggested vapourous condition, before we venture to place it even among the *probabilities* of Nature. Nay, we have legitimate ground for concluding that it never *was*, because it never *could be*, so: but that HE who created the Universe, created it, as regards its solid materials, not in germ, but in perfection,—that, with the prescience which was needed to insure *stability*, He FIXED the distance and velocity,

appreciable neighbour, the moon; as we can discover no indications of either air or water on her surface. It is probable, however, that we may ere long be better acquainted with that surface: and, consequently, in a better position to draw legitimate conclusions. A young gentleman named Robert Raikes Taylor, now resident in Birmingham, threw out a suggestion a short time ago, that if a photograph of some portion of the moon's disk were taken from the mirror of a large reflecting telescope, (say that of Lord Rosse,) and a portion of this magnified by the photographic process again and again, we might at length obtain a fair representation of some lunar landscape on a similar scale to the large paintings of terrestrial landscapes; and thus come at the fact whether animal or vegetable life existed there. This idea, when fairly examined, does not appear to me *very* extravagant. There is so great a difference between God's work and man's, that the most minute *photograph* of a landscape will contain its every feature and lineament—lines which are invisible to the unaided eye coming out into bold relief as increased magnifying power is applied to them. And if our instruments could only be brought to a sufficiently perfect state, Mr. Taylor's "dream" is much more likely to be realized than many of those which it is the object of this Work to examine. I have given his proper name and locality, in order that if this ever should be the case, he may obtain the credit, be it small or great, which is due to the author of the original suggestion.

the size and weight, the orbit, plane, and inclination, of every world and every satellite; and PLACED its beautiful and glorious orbs in the orderly and harmonious positions in which they are now arranged.

CHAPTER V.

THE TRANSMUTER'S DREAM.

"High! presto, pass, change!" an exclamation which excited such marvelling admiration some fifty years ago, when the so-called "Conjurer" apparently transmuted one material substance into another, must now give way to a more potent word —"development!"

The earlier Charlatan only professed to deceive our senses, and impose upon our credulity, when he *apparently* turned an apple into a plum-pudding, or an egg into a young lady. And when one of the fraternity was once brought up before a sage magistrate in Leicestershire, for dealing with the powers of darkness, and greeted with the exclamation, "I'll tell you what they say about you, they say you're a conjurer,"—he obtained his own release by the naïve reply, "And I'll tell you what they say about you, they say you're no conjurer at all."

The modern Transmuter, however, makes a very different profession. His cry is, "No deception, ladies and gentlemen, no deception; we have *real* transmutations here. Listen to me, and I will show

you the very process by which a monad is transmuted into an elephant or a man."

Geology, which while it spoke only in hieroglyphics was thought to militate against revealed religion;* but when its language was clearly understood, proved to be one of her most valuable supporters, had already placed an extinguisher upon the system of the old Naturalists. *Their* creed was, "All things continue as they were without beginning. There never has been, never can be, any deviation in Nature's laws. *They* are fixed and stable: and no testimony respecting such supposed deviations *can be* worthy of belief; because it is more probable that man should lie, than that any thing so contrary to our experience should take place: *therefore*, Christianity, which records such deviations, is untrue."

There was a fallacy in this creed which was not at first discovered. But Campbell (I think) very properly shewed that we had no right to assume "*our*" experience as the standard of what is possible or probable. For with just as good reason might an Abyssinian monarch deny the possibility of water becoming solid, and denounce those who asserted such a fact as imposters, because ice was a thing unknown, and "contrary to experience," in the

* See Appendix A.

Torrid Zone. John Foster, too, carried this idea further; and showed, that till a man knew every thing, and had been every where, he was not in a position to say there was no God; for if he had missed making acquaintance with *any* portion of the Universe, that might be *just the very place* where the evidences of His existence were indisputable.

Geology, with its facts and details, "graven as with a pen of iron in the rock for ever," proved the earth's crust to be "just the very place" where the Naturalist would meet with such a complete and unanswerable confutation. His denial of any change in Nature's operations was clearly confuted by evidences of change, at once on the most minute and the most gigantic scale. His assertion of man's existence in an unbroken series "for ever," was utterly demolished by overwhelming evidence, that the time was when neither man nor any other living creature existed on earth's surface; and that for untold, yea, incalculable ages, the earth was not in such a condition that man, or *any* of the higher races of creatures, *could possibly* exist thereon.

The protean deceiver of mankind, however, was unwilling to strike her colours, even after such a signal defeat. "Two can play at that game!" was her ready exclamation. And, suborning Geology for a witness, she hoisted a new flag, and raised the cry—"Development!" Transmutation!"

The Transmuter took up matters exactly where the Astronomer left them when his visionary fire-mist had just cooled down into a solar system. This was the case alike with Lamarcke, Professor Powell, and the author of the "Vestiges of Creation." The Transmuter conceived, that on this cooling taking place, the *energia*, [ενεργία,] or active energies of Nature, possessed power to produce, perhaps, a monad, or the most rudimentary form of animal and vegetable creatures. This, through "laws intermitting," or under "a law to which like-production was subordinate," in the course of ages, when the proper conditions existed, gave birth to creatures of the next higher order, this again to the next higher; and so on, through the toad, the dolphin, the mammalian quadruped, and the monkey, up to the man. An elegant parentage, and highly complimentary to the human family! But if these Philosophers are willing to own a monkey for their parent, there are others of the race who give preference to the idea that they were formed out of the dust of the earth, by the hand of an Almighty Creator.

In the most plausible manner, the said Transmuter attempted to make all the Sciences give evidence in favour of his scheme. He instanced, without any valid ground, intermittant generation, and deviations from the ordinary process of generation, as examples

bordering closely upon such transmutation; and, because Geology testifies to a gradual advance in the forms of creatures which have successively inhabited the earth, contended that such advance had taken place by the process of transmutation, rather than by any interference of *creative* power.

This, however, was soon shown to be a palpable mis-reading of the record. Professor Sedgwick, Sir David Brewster, Hugh Miller, and other eminent Geologists, made it evident that this advance in the order of creatures could not be by the process of transmutation, — that, in fact, fishes, reptiles, birds, and mammals, before man, had successively been the magnates of creation; and that each order, in commencing its existence, instead of exhibiting any symptoms of being just developed out of a lower one, was in its full prime, and exhibited a tendency rather to degradation than advancement.

Baron Cuvier showed clearly, by comparison of present creatures with ancient mummies and dilluvial remains, that during the four thousand years which composed the historical period of our earth, there had not been the slightest tendency to alteration of structure; and demanded evidence of such strange geneology, by the production of some of the "intermediate" forms from among the organic remains which the earth had preserved.

Bachman, Müller, and Pritchard, shewed that *species* were altogether distinct; and no new species could be produced by the intermingling of those already in existence—the barrenness of a mule offspring presenting a perpetual bar to any such attempt.

These evidences were gathered together, and a number of other minor details examined and shewn to be untenable, in "Creation's Testimony to its God;" so that in 1855, the Transmuter's dream might be said to be almost dissipated, when a new champion came to the rescue, to break a lance with the opponents of Vestigian Theories.

This was the Rev. Baden Powell, Savillian professor of Geometry in the University of Oxford, already mentioned in the Mechanical Philosopher's Dream. In his "Essays on the Spirit of the Inductive Philosophy; the Unity of worlds, and the Philosophy of Creation," the Rev. Gentleman brought out what might possibly be called some new ideas on the subject. With powers of generalization of no common order, he endeavoured to make the Baconian system of Inductive Philosophy subserve the cause of Transmutation. But, instead of generalizing FACTS, and thence by inductive process seeking to obtain his conclusions, he generalized theories and fancies. The process of his argument, divested of all sophism, showed that the conclusion

was foregone; and that the powers of his mind were engaged in the effort, not to draw from facts the evidence which they would naturally give; but to support, either by facts or the absence of facts, the theory which he had chosen.

Discreet and genuine philosophy had demanded some evidences of transmutation of species, by the production of "intermediate forms." And how did he answer that demand? As the bowels of the earth refused to supply any, it was clear that it could only be done by creating or imagining that which did not exist. And to this work of creation, —the proper work not of a "Philosopher," but of a Poet,—he at once applied himself.

To shew the fallacy of his inductions, I must first give a brief statement of his case; and though I do this in my own words, as less technical and less involved than his, I pledge myself for the *fairness* of the statement. It is as follows:—

"Deeply imbedded in the crust of the earth, near to what may be termed its foundations, the granite and other rocks of igneous origin, are to be found certain fossil remains of animal and vegetable creatures. They were chiefly, if not universally, aquatic; and of what may be termed the humbler classes—more rudimentary in their structure than the creatures afterwards existing. Upon these there lies a superincumbent mass of material, varying in

thickness in different parts of the earth, but often reaching to a depth of several thousand feet. Then comes imbedded another quantity of fossil remains, further advanced in organization, and apparently adapted to a different condition of the earth. On this there lies another mass of rock, from which fossils are absent; and on this another stratum, containing organic remains: and so on, till we come to the surface of the earth."

From this, his case, Mr. Powell argues that there are gaps between the different successive formations, which would allow time enough for the development of the creatures whose remains are found in the lower strata into those which are found in the next above them where fossils are discovered; and thus on till we come to the surface of the earth and its present inhabitants. And he contends, that, instead of believing in such breaks in the chain of order and continuity as successive creations and catastrophes would involve, we ought rather to conclude that the process of orderly evolution was regularly going on;*

* "If an interval of unknown and incalculable length intervened between two recognizable formations, and during all this vast time circumstances did not allow the imbedding of any characteristic exuviæ, it would be utterly vain and futile to assert that there was necessarily any breach whatever of the *law of continuity*, or to affirm that during the whole of that enormous period—of which we are from the conditions precluded from knowing any thing—all the species of the earlier epoch were not continuously existing, and as slowly

but that in each successive and enormous "break," or mass of materials without organic remains, circumstances were such as did not admit of the preservation of any remains of those "intermediate" creatures which would have shewn the progress of transmutation from the one race into the other.

And this dream of his imagination he wishes us to receive as an induction from the facts of Nature, as stated in his case! and in place of those "intermediate forms" which Theology and Philosophy demanded!

First, then, I answer, that his premises are not correct. Sir Roderick Murchison, Hugh Miller, Professors Forbes and Sedgwick, and a host of other high authorities in Geological matters, all deny the merely *rudimentary* nature of the earlier living creatures, representing them rather as being better adapted to the earth's then condition, than less complicated in their structure than the creatures by which they were succeeded. And Sir Charles Lyell, in the later editions of his "Manual of Elementary Geology," has given indisputable evidence of the existence of what are called "higher

changing, (by whatever means or law,) to others more and more different, along with corresponding changes in physical conditions, until, at the period when things were such that remains were again deposited, the whole character of the *fauna* had changed in the manner observed."—*Powell's "Essays,"* pp. 345, 346.

races," coeval with the earliest living creatures whose remains have yet been discovered.

But even if his case were stated in accordance with the facts of Nature, we should have far greater reason, from the premises which he himself lays down, to believe in destructive catastrophes, and fresh exertions of Creative power, than in that continuity of orderly evolution for which he contends, and which is absolutely necessary to sustain, by this new process of "induction," the Transmuter's dream.

The condition of the earth's crust gives us plain evidence of "catastrophes," even if it were possible to fritter away the evidence which it also gives of successive "creations." The strata which have manifestly been deposited in a horizontal position at the bottom of lakes or oceans, are seldom found in that position. Upheaved, thrown aslant, broken, contorted, dislocated, and, in some instances, almost inverted,—they tell us of convulsions of the most tremendous description. Moreover, we are unable to conceive of any conditions in which, in the way of orderly evolution, the coal measures could have been formed. Carbon and hydrogen are subtile elements, which, by the vaunted "laws of Nature," constantly seek a gaseous form. It is ordinarily, and almost universally, by the powers of vital action, by the processes of *organic* life, that they obtain a solid

state. Vegetation extracts them from the atmosphere; and releasing the oxygen with which they were united, makes use of them for the increase of its substance. But as soon as vital action ceases, decomposition commences; and carbon and hydrogen begin to escape again in gaseous form. So quickly do these subtile elements disperse, that the debris of a tropical forest, accumulated for at least four thousand years, will be found to have produced but a few inches of vegetable mould, with scarcely any hydrogen in it. Yet coal contains hydrogen as well as carbon, or we should seek in vain from coal to light our cities with hydrogen gas: and the coal measures, usually between twenty and thirty, sometimes approach to seventy or a hundred feet in thickness. And I defy any Philosopher of the Vestigian School, yea, all of them put together, to show how, by any *possible* means, the coal measures could have been formed; unless, by some dreadful convulsion or catastrophe, immense masses of vegetation were covered up by masses of superincumbent material, to screen them from the decomposing influences of the sun's light, heat, and actinism.

Nor let us for a moment lose sight of the fact, that the Rev. Professor's attempt to prop up the falling doctrine of development is founded wholly on assumption.

It is *mere assumption*, that the barren deposits

which intervene between what may be called the *inhabited* strata were not the result of violent convulsions, but of long, long ages of quiet deposition.

It is *mere assumption*, that, during these supposed long ages, organic life was constantly continued, though the conditions were not such as to preserve us "samples" of "intermediate forms," by which we might see the process of development of one race into another.

It is *mere assumption*, even, that these "enormous breaks" make it evident that there was "time enough" to allow of such development; for so great have been some of the convulsions through which our earth has passed, that some portions which were previously surface, might in a few days have been covered with a hundred feet of debris or detritus.

The "Inductive Philosopher" modestly asks us to draw the same conclusion from the absence of facts as though they were present; or to reason as if absence and presence were the same. And because if those facts, or those imagined "organic remains," were present, they would go far towards establishing his views, to believe that those views are equally established because they are absent!

But, happily, we are not left to mere conjecture, whether convulson or "orderly evolution" has been the process carried on in past geological eras—the

process by which our planet has been brought into its present condition. The later researches of MM. D'Orbigny and Eli de Beaumont, at the feet of earth's mountain ranges, so admirably popularized by Dr. Lardner in his "Popular Geology," shew clearly not only that there *have been* such convulsions, but what has been their *cause*. They show them to have been occasioned by the sudden and violent upheaval of the different mountain chains, which have given to our earth its present contour; and made it at length such an admirable dwelling place for the human race, so pregnant with convenience and redolent of beauty. And thus the last platform of the Transmuter is drawn from beneath his feet!

What then are the facts which we are indisputably entitled to gather out from the ground we have passed over? They are—

1st. That the stony tablets of the earth have, thus far, refused to present a single specimen of those "intermediate forms" which are absolutely necessary to furnish even a *prima facie* case on behalf of the so-called doctrine of Development or Transmutation.

2nd. That the upheaved and contorted position of earth's once horizontal strata, and the very existence of her coal-measures, give irresistible evidence that she has passed through dreadful

convulsions in past geological eras; and this, coupled with the fact that the organized creatures of each era are altogether different from those of the era preceding, leads legitimately to the conclusion, that the process of God's providence on earth has been destruction and new creation—the very convulsions which caused destruction being an integral portion of the preparation of the earth for the reception of "higher" representatives and manifestations of Creative power and wisdom.

3rd. That those enormous "breaks in the chain of order and continuity," which are interposed between the various fossil-filled strata, and which are illegitimately cited by Mr. Powell in support of the development theory, are *not* indications of "enormous periods during which the progress of evolution was constantly going on;" but indications of periods of convulsion, caused by the throwing up of the various ranges of mountains—by the debris of which "catastrophes," the then organized creatures of the earth were deeply, and, for the most part, quietly entombed.

Thus, then, again, do God's realities, the stubborn facts of Nature, stand prominently forth to vindicate His truth; and dissipate the Sceptic's vague and foolish dreams!

CHAPTER VI.

THE TRANSCENDENTALIST'S DREAM.

Prior to the bombardment of Algiers by the British fleet, a young officer, who has since been celebrated in our naval annals, was despatched to demand the liberation of the Christian slaves, and an improvement in behaviour for the future, under pain of penalties which were afterwards inflicted.

The Dey of that country, whose notions of wisdom were unfortunately not quite unique, was offended at the youth of this "envoy extraordinary," —and remarked, that he did not know what his Majesty of England could be thinking of, when he sent to him, on such an errand, "a beardless boy."

The reply was characteristic of the British tar. It was, that "if his Majesty of England had measured wisdom by the length of the beard, he would have sent his Deyship a he-goat."

There seem to be others who connect wisdom with the goat's beard; for in certain districts of England, as though by mutual consent, a number of young men who affect to think more deeply than their neighbours, and to dive into subjects which

transcend the thoughts of the generality of mankind, have a peculiar way of shaving their faces, so as to make their beards resemble that of the goat. Such was indeed the *fashion* in the Elizabethan era—the days of Shakspeare and Bacon. But the love of antiquity which influences most of our moderns, extends but little farther than the beard. And it would be a sad mistake, to suppose there were either Shakspeares or Bacons wading in those shallows, where these would-be philosophers, like playful children, keep stirring up the mud; and, with solemn faces, utter the exclamation, "Oh! how deep it is! we can't see the bottom."

The *native* region of the Transcendental Philosophy, is the dreamland of Germany; and its Professors, for the most part, bear very unpronounceable names, which, in more than one respect, may be fairly represented by such cognomens as Cloudavich, Muddyouski, and Crackjawbreakenback. But a portion of young England has been affected by the virus; and it has sadly deteriorated their naturally matter-of-fact Anglo-Saxon propensities. Grasping at shadows, and reaching after ideas too ethereal and intangible to be seen without the steadiest and most penetrating gaze; with a sufficient love of the abstract to abstract their own minds from pursuits of a useful and practical character, these gentlemen generally affect a depth

of thought and grasp of intellect of which their poor heads are incapable. They behold only *the distant tops of thoughts*,—thoughts which are really mighty, though mistaken ones,—like the distant tops of mountains, gleaming in light at sunrise, when all the intervening tract is involved in darkness; and, perfectly content with the mist that surrounds them, they deem that they have seized on the whole landscape, or grasped the Universe in their mighty embrace. The question, "*Cui bono?*" appears to be one that never enters into their thoughts. The practical usefulness of any subject of study is a part of the question which they seem never to consider. And yet, in the midst of their entangled and intangible verbiage, they sometimes give us indications by which we may measure the same with a tolerable approach to correctness. For how useful, for example, such writings as Hegel's must be to his followers, we may judge by his own bitter remark, "There is but one man who understands me, and he does n't understand me." And this was one of the new-light gentlemen, who undertook, by volumes of Transcendental Commentary, to enlighten the world on the meaning of those Scriptures, which the poor ignorant world had agreed to regard as so plain in all essential things, that "the *wayfaring man*, though a fool, need not err. The remark of the

poor old lady, after reading an explanatory edition of the "Pilgrim's Progress," was tolerably applicable here: *she could understand it, all but the notes.*

Our own clear-headed Philosopher, John Locke, intimated, that if a man could not express his thoughts in intelligible language, we need not give ourselves any trouble to understand him, for he could not understand himself. This is too true of the majority of these Transcendentalists. It is questionable whether one in twenty knows any thing tangible about the dreamy principles he professes, their origin, or history, or whither they are tending. Yet such, it must be confessed, was not the case with their German leaders. They *had* a meaning, though it was often too ethereal to be grasped by the practical multitude; and still more frequently was lost in the multitude of words in which it was their habit, and is still the habit of their followers, rather to *bury* than *express* their thoughts. Their DREAM, moreover, is founded upon facts and phenomena which meet us in the Universe — God's realities, which it holds forth for our contemplation.

To catalogue the names of the Transcendental Dreamers, or give even a brief outline of their dreams, or the names of the numerous works which this portion of the world's literature comprises, would be to trespass sadly on the patience of my readers.

I shall notice only its most prominent features, its most salient points, which will enable us to trace the progress of thought, and serve as landmarks in tracking her devious and wayward flight from truth to error.*

There are in this world in which we dwell, certain distinctions and correspondences, clear and obvious to the contemplative mind; but which the unobservant lose sight of altogether,—even as, in taking a walk into the fields or lanes, *one* would pass over, without seeing it, that which would deeply interest and gratify *another*. It is something analogous to this in the mental world—a seizing upon that which eludes the common observation, which is the peculiar characteristic of Transcendentalism.

It was a fundamental principle of the *Cartesian* philosophy of the seventeenth century, that there existed in the Universe two separate principles,—SPIRIT, whose essence is thought; and MATTER, whose essence is extension: and that these could have no influence the one upon the other.

Leibnitz, receiving these principles of *Des Cartes* without question, though the latter of them was of a most questionable character, set himself to show by what means it was they coöperated so beautifully;

* An elaborate and analytical notice of the Transcendental Philosophy will be found in the valuable work of Drs. Mc Cosh and Dickie —"Typical Forms and Special Ends in Creation."

and really reached the verge of a great natural truth, when he contended that it was in consequence of a harmony preëstablished between them.

Unfortunately there existed no *practical* Philosopher in those days, whose powers of mind were sufficient to lead the world to recoil from Transcendentalism to the clear and tangible truth which that great man, notwithstanding the misleading studies of the times, had here so nearly attained.

Kant, one of the deepest thinkers that Germany has ever produced, took up the speculation at this point; and reasoned upon the relation between the internal and external—the subjective and the objective—and the evidently harmonious nature of that relation. He saw that human knowledge cannot be wholly accounted for by mere impressions from without—that it is needful there should be a subjective power as well as an objective influence. If he had condescended to inquire of tangible Nature —of physical Science—for an explanation, the Anatomist might have led him into a more practical path in his search after truth, by showing him that man has two distinct sets of nerves,—the sensor and the motor,—the one to convey *to* the sensorium impressions from without; the other to convey *from* the sensorium the monitions of his will. But, in love with Transcendentalism, he fell greatly into the error of the Idealists,—regarding the external thing

which produces the impression as an *unknown something*, whose properties and relations are, in a great measure, *supplied by the mind which contemplates it.* "It is thus he accounts for the relation of cause and effect, and the harmonies in the Universe. They are not (according to his system) in the Universe itself, but are merely in the mind; and are thence, as the forms, or categories, or ideas, under which the mind knows all things, *projected upon* the world."

Well did the practical, though highly imaginative, noble Poet of the present century exclaim,

> "When Bishop Berkeley said there was no matter,
> It was no matter what he said."

One more round ascended in the transcendental ladder, and the duality, the independent existence of mind and matter, was at an end. *Fichté* pushed the "idea" nearer to its legitimate conclusion. He alleged that the mind, which was capable of creating all the relations of matter, might form matter itself. This was

> "Another step upon *the verge* of truth;
> But taken so aslant, that he who took it
> Slipped headlong into error."

The *finite* mind was confounded with the *Infinite.* The whole external world became in this philo-

sophy a production of the me, the ego—all its laws, its order, its harmonies, and why not its imagined substance, being given it by the mind itself. In the progress of these speculations, the ego at length became expanded into a kind of universal ego, which constituted the moral order of the Universe, and went by the name of God.

Another stone only was wanting to complete this building as a Pantheistic temple. That stone was laid by *Schelling*. According to him, it was absurd to suppose that the ego could *create* all the harmonies of things. We must go a step higher. "We must go back to the origin both of the subjective and the objective; and there we shall find them identical, and flowing out of one original Essence, called by the name of GOD. This self-existent Essence, or Being, develops *it*self, [no personal pronoun here,] according to a 'law;' and becomes, on the one side the ego, and on the other side the non-ego, (the me, and the not-me); on the one side the subject, on the other side the object; on the one side *mind*, and on the other *nature*. HENCE the harmony of the two: it arises from their *identity*. The subjective and the objective are in such visible correspondence, because [they are] the developments of one and the same principle. Hence the statement that nature is petrified intelligence, and that mind is conscious reflective nature. The

feeling of beauty in the mind [is made to] correspond with beauty in the world, because both are the unfolding of one eternal power, which is at the same time God and the Universe. God is lovely; the Universe is lovely; man's soul loves the lovely in nature, and creates the lovely in art, because all are manifestations of the ONE who is infinitely lovely."

I need not follow the dream farther, and trace the vagaries of the later adorners of this Pantheistic temple. All they *have* said, all they *can* say, is more clearly and more forcibly expressed in the misleading words of Bolingbroke, put into verse by Pope—

> "All are but parts of one stupendous whole,
> Whose body nature is, and God the Soul."

But now let us look to the reality—God's reality—upon which this visionary structure is founded.

We have placed before us in this world of ours, a *set of psychological, or internal, facts.* Minds perceive through the senses; and possess certain intellectual propensities, as generalization, causality, and comparison; besides instincts and affections, craving for external objects on which to lavish themselves; and a sense of beauty, which longs for scenes of beauty and sublimity.

We have also placed before us, *a set of physical,*

or external, facts. In this same world are things which we can perceive, endowed with properties which we can investigate, grouped into classes which exercise our propensities of comparison and generalization. Here, too, are effects, or events, constantly occuring, which exercise our propensities of causality and comparison; and scenes of sublimity and grandeur suited to the exercise of the æsthetic sentiments.

Thus much for the *subjective* and the *objective.* But we have also, as I need scarcely add, what has caused so much of Transcendental dreaming, an exact correspondence between these two independent sets of facts; and are, moreover, gifted with faculties to discover and admire their harmony. Of this I need cite no better evidence than the truth so strikingly brought out by Hugh Miller, in the first Chapter of his "Testimony of the Rocks," that the classification of plants and animals by Lindley and Cuvier agrees in every essential particular with their genealogy, the classification which is apparent in the geologic history of the past. Thus it is apparent that the classifying principle of the *mind within* exists as a principle of *nature without.* And both are in clear correspondence; for "the by-past productions of our planet, animal and vegetable, —myriads of ages ere there existed a human mind, —were chronologically arranged in its history,

according to the same laws of thought which impart regularity and order to the works of the later Naturalists and Phytologists."*

But what is the plain and natural inference to be drawn from these facts, instead of the vague dreams, that have generated such unnumbered volumes of incomprehensible "bosh;" and addled the heads, and turned the brains, of thousands? It is simply, that the harmony between the internal and the external, the subjective and the objective, is the result of their being both *the creations of one Being*, who, in His wisdom and goodness, *intended* and *established* that harmony between them. "The mind as the contemplator is so constructed as to be able to attain a knowledge of the thing contemplated, and the thing contemplated is so formed as

* As regards our sense of beauty, evidence enough is given in the sixth Chapter of Miller's "*Testimony of the Rocks*" that it is not as it is often called "mere fancy," or "dependant upon taste;" but a *reality*, implanted by God. Our chief orders of architecture; our best specimens of decorative art, and ornamentation; nay, some of the most favourite patterns of printed calicoes and muslins, have, unknown to the inventors, had their archetypes in fossils which were buried in the crust of the earth long before a finite intellectual being existed on that earth to contemplate them. Like the shadows of man's thoughts projected before him, aye, myriads of ages before him, they are as prophecies of the being whom God had ordained, in the counsels of eternity, to "have dominion over His works"—ordained "before the foundations of the world;" and shew us, too, some other features in which this intellectual being might truly be said to be made "after His own image."

to suit itself to the intellectual nature of the being who has to contemplate it." Adaptation, as of light to the eye, and of the eye to light; adaptation, as of the ear to sound, and sound to the ear; adaptation, as of the muscular power to the pressure of the atmosphere, and the pressure of the atmosphere to muscular power; adaptation is exhibited throughout the works of the Eternal One. And this is but another trace of that family likeness which is everywhere observable; and, as an exhibition of overflowing goodness, should call forth at all times our gratitude and praise. And thus we find that the Transcendentalist's dream, like every other Sceptical illusion, vanishes into mist and nothingness.

CHAPTER VII.

THE MYTHIST'S DREAM.

The Mythist is, perhaps, the most prevalent, and also the most accommodating, of all the Sceptical sects in the present day. No matter what may be the sentiments of those with whom he comes in contact, he can partially agree with *all* of them; for he is your universal believer, as well as your universal *dis*believer. He finds truth, or at least a portion of truth, everywhere, and in every thing. To him, all religions appear somewhat on a par; and he thinks, according to an old saying prevalent in some of our Midland Counties, that "if there is any difference in them, they are about alike." He has at once a high respect for Abraham and Confucius, for Moses and Pythagoras, for David and Ptolemy, Isaiah and Socrates, Herod and Plato, Jesus and Mahomet. All of them have truth in their sayings and writings; but that truth, he suggests, needs separating from the errors with which it is encompassed; and they are fools in every case who swallow the whole. Like the heathen Emperors of old, he could do with Christianity very well, if it were not

"so confoundedly exclusive;" but it is determined to stand alone, and recognise no rivals. Other nations had their legends as well as the Jews; and why should not the one be taken into account as well as the other?

Thus the Holy Scriptures are placed upon a level with the Vedas and the Shasters, with Ovid's Metamorphoses and the Koran, with the Descent of Odin and the Stories of Gog and Magog, with King Arthur's Knights of the Round Table and Mona's Legend of the Sword of Macabuin. And how are we to confute such dreams? How! Let the Mythist call them equally legends if he pleases; but in that case we have a legitimate right to demand as much evidence to corroborate the one legend as the other. Shew me, then, the smithy in which Loan Maclibhuin, the dark smith of Drontheim, laboured; show me the sword that would sever a mountain of granite, if brought into immediate contact with its edge, and *I* will believe it. Yea, give me sufficient evidence that a faith in any of these legends will change the character of a man's whole life,—

> Will make the thief
> Honest, the liar love the truth, the slave
> Of concupiscence chaste, the man of wrath
> Meek and enduring, the oppressor kind;

Shew me that a belief in them will change for the

better the whole surface of society, and lift man God-ward, and I will believe them too. This, Christianity has done. It has been more potent for good than all the systems of philosophy which the wisest and best of men have ever invented. And are we asked to believe that all this mighty influence for good has been the result of a mistake? a literalizing of that which is only figurative? a reception *as fact* of that which is only a myth, an allegory, or a mere delusion? Potent dream! Omnipotent fancy! What are *all* the *realities* of life when brought into comparison with *thee?*

There was a depth of truth greater than is generally seen in the intimation given by the great proverbial Philosopher of Judah, that *that which is* is only in truth *that which has been,* and there is nothing really new under the sun. *Man discovers;* but he discovers only what has existed from the creation—a part of the wonderful works of an Omnipotent Deity! *Man invents;* but his inventions are a mere taking advantage of Nature's laws and forces—the ordinances of the Most High! Talks he of steam or the electric telegraph? They are only an application of God's laws and gifts! Instead of priding himself upon his attainments, how should man not rather marvel at the imbecility of a creature *so gifted* yet *so blind,* who, surrounded as he has been for thousands of years by forces and

appliances, and the great Revelation of the Universe, has been too ignorant to use the means which were ready beneath his hand!

The modern Mythist prides himself upon the novelty of *his* views: but here, too, that which *is* is only that which *has been*. There were mythic dreamers in ancient times, among the Greeks and Romans. There were mythic Sophists among the Jews of old, who could spiritualize every thing except their own hearts and minds; and made the Word of God of none effect by their traditions. The Gallic Infidel, Count Volney, too, was a greater Mythist than any of his modern imitators; scarcely at all surpassed, except by a few of the Ideal school, who discourse so learnedly about the "ego" and the "non-ego," as almost to lead to the conclusion, that this tangible, substantial Universe is only a myth; and there is nothing really existing except the mind, which deludes itself by supposing that what it sees, or fancies that it sees, is real.

The "Ruins" of Volney are an attempt to prove that all religions are adumbrations of astronomical or astrological myths,—star-worship being, according to his view, the foundation of all systems of theology. From the Zodiac of Dendera, which he considered to be of an age far antedating the Mosaic Creation, and to contain a record of the transactions of ages still more remote, he endea-

voured to draw a history of the origin of all worship—a mythic history of all gods. Unfortunately for his chimera, the discovery of the meaning of hieroglyphic symbols has shewn that "*venerable monument of antiquity*," erected so long prior to Adam's existence, to have been completed in the reign of Augustus Cæsar. But so true a latitudinarian was Volney, in his ideas, and in his interpretation and application of facts, that, if only the same scope were allowed me, I would undertake to prove almost any thing.

In a little work which I published anonymously some years ago,* the object of which was to turn the laugh upon the Sceptic who would not listen to reason, I showed that we had quite as much, yea, far more, reason to believe that the nursery rhymes with which we have been familiar from our childhood are astronomical myths, than that the incidents related in the Holy Scriptures partake of that character. Thus, for example, with that "beautiful legend"—

> "Little Bo-peep has lost his sheep,
> And does'nt know where to find them;
> But let 'em alone, and they 'll come home,
> And carry their tails behind them."

This you have, doubtless, been in the habit of

* "Which was First? a brief history of the great Egg Controversy; by Anti-Sceptic."

considering as merely an idle tale to amuse our infants in the nursery; but the Mythist might, with very good grace, declare to you that it is an allegory in which a very deep and hidden meaning is contained. This "little Bo-peep," let me assure you, is the Sun, who is usually represented as Apollo, carrying a bow, (when the "w" in this word was dropped is not quite certain); and who "peeps" out of the heavens in a morning when he rises. The sheep alluded to are comets, whose prolonged elliptic course, as compared with that of the planets, is here described under the figure of their being "lost." In the second line, we have a description of their approach to their aphelion, when they often proceed so far away, as to be entirely out of sight; so that the sun, it is said, "does 'nt know where to find them." In the next line, we have a declaration of the certainty of their return to their perihelion, in the words, "Let 'em alone, and they 'll come home:" and in the last line, we have a beautiful, and surpassingly accurate, description of the *manner* of their return; for it is invariably observed, that in their movement towards the sun, they "carry their tails behind them."

It is not easy to contend in sober earnestness with those who would turn every thing into myth and fable; but what it was impossible for the Physical or Mathematical Sciences to perform, Antiquarian

and Ethnological researches *are* performing: and even the Mythist is not left in quiet possession of his dream. Chevalier Bunsen, and the indefatigable Dr. Tregelles, have given us additional evidence, although it was scarcely needed, that the New Testament Records are no gathering together of floating mythi, woven into a connected narrative long after the events which they recount were said to have taken place: but that they existed as authentic *written* documents, within a very few years after the occurrence of those great transactions they record. And as to the Old Testament, if we need any other authentication besides the care with which the Hebrews kept their sacred books, the *present* age has given it in abundance.

Those wondrous pyramids that rear their heads in majesty, and cast their long shadow on the Delta of the Nile, rivalling even our modern railroads, as stupendous monuments of human industry,—they, unasked, have come into court to give their evidence on behalf of God and man. Their walls spoke long in an unknown language to mankind; but their dark enigmas are, when needed most, transformed to living utterances, and reveal the secrets of the past. Whose pencil painted on the walls of Karnac transactions which the Hebrew Scriptures tell?*

* See Osburn's "Egypt."

Whose chisels cut upon the rocks of Sinai, the "written mountains" and the "written valley," a record of the exode of God's chosen ones?* Who buried beneath Birs Nimrod and Mujelibe a record of the deeds of Babylonian Monarchs,† whose names appear not in more classic annals, though photographed in Scripture by the sunbeams of Jehovah Ruash, the Spirit of our God? Who built the tombs and dwelling places of Edom‡ in the "flinty rock" high as the eagle's eirie? Who buried beneath the mounds of Nimroud, Khorsabad, and Kouyunjik, the records of downfallen Nineveh—records agreeing so minutely with what the Scriptures teach? Who built the tomb of Daniel, and laid down the marble pavement of the palace of Shushan, which Persia has, within the last few years, disclosed? Who builded ancient Erech, and inscribed upon its moulded bricks the founders' names?§ These are no myths, no dreams, no allegories; but plain and tangible realities, submitted *now* to man's investigation, preserved by God amid the wrecks of nature and of nations, until the age when this new phase of Scepticism

* See Forster's "One Primeval Language," part 1.

† See Major Rawlinson's "Researches."

‡ See Keith's "Evidence of Prophecy."

§ See Loftus's "Travels."

needed this very class of evidence to dissipate its vague and foolish dreams.

Thus have we seen, by prominent examples, how every Sceptical illusion vanishes before the light of Science; while the evidences of the Christian faith stand firm. Yet few indeed are the evidences which have come under our notice in this Treatise, compared with the mighty whole by which God's records are corroborated—a drop to the fathomless ocean! Those evidences pour in upon us with the light of the nebulæ; they are radiant in the courses of the stars; they are visible in the changes of nature; they are borne upon the wings of the wind; they are breathed in the murmurs of the ocean; they are showered down in the messages of heaven, and dug up from the bowels of the earth. And yet man recklessly pursues his way, inheritor of a felt but unacknowledged immortality! and heeds them not!

Oh, Thou! whose voice of Love first spake the Universe to being! Oh, Thou! whose voice of Love is ever heard in Nature's mingled but harmonious intonations! Oh, Thou! whose voice of Love once raised on Calvary the agonizing but triumphant exclamation, "It is finished!" Oh, Thou! whose voice of Love still welcomes the repentant sinner

to Thy bosom!—call back the wanderer from his dream of madness, that he may listen to the teachings of Creation, the teachings of Thy Word; and hasten the coming of that better day, when the earth shall be covered with the knowledge of Thee as the waters now cover the dark caverns of ocean! Amen.

END OF PART I.

MAN'S DREAMS AND GOD'S REALITIES.

PART II.

CHRISTIANITY THE CONVERGING CENTRE OF EVERY GREAT TRUTH WHICH THE UNIVERSE UNFOLDS.

CHAPTER VIII.

INTRODUCTORY—THE TEACHINGS OF THE UNIVERSE AND OF THE REVEALED WORD NOT DISCORDANT. —THE GREAT TRUTHS OF THE UNIVERSE CONVERGING IN CHRISTIANITY.

It has been a common practice with mankind, when a work of any importance has been published anonymously, to endeavour, by noticing its peculiar characteristics, and comparing them with those of other writings, to discover who was its author.

In this endeavour, the general plan and subject of the work is taken far less notice of than little touches, peculiar phrases, idiomatic modes of thought, and favourite words.

Thus, also, with works of art. Paintings and sculptures are traced to those who produced them, not so much by the *subject*, as by their general contour, their tone of colouring, and their characteristic touches.

In professing to make a comparison between the Holy Scriptures and the Book of Nature, to see whether they were probably the production of the same Master Hand, the Sceptic has proceeded on a

different plan. Finding the great subject of the two Books entirely different, inasmuch as the one was physical, the other moral, he leaped to the conclusion, that they were the production of different minds; and then, instead of seeking for resemblances, he sought only for discordances.

And he appears to have satisfied himself; and proclaims loudly to the world that he has found them. But how? He has seized upon one colour only of the prism, forgetful that *all* are needed to produce unsullied light. He has caught two separate notes of the strain, which in themselves appear discordant, regardless of the intervening chords that blend them into perfect harmony. He has pointed to lofty banks which now stand widely separated from each other, but noticed not the erosive stream below, whose constant flowing has divided them.

My task is a different one from his: and I shall consequently proceed upon a different plan. Yet, I shall not content myself with showing that there are numerous resemblances where he could see nothing but discordance. I shall not content myself with merely showing that what the Greeks would call "τα ἰδια," which I will familiarly translate into "the ownishness"—the own peculiar characteristic touches—are the same in each. I have chosen a higher, more important task—to show that the one

is a necessary supplement to the other, in order that its teachings might be comprehended by moral and intellectual beings—that Revelation is to Nature as the translation of a mystic hieroglyph—the verbal transcript of what else were little better than dumb pantomimic show—that Christianity is the grand Converging Centre of every important Moral Truth which this expanded Universe unfolds.

The Universe, indeed, holds forth many truths for our instruction and contemplation—truths mathematical and geometrical, physical and moral. It is so full of order and regularity, of uniformity and precision, as to have induced the conviction, and moulded that conviction into the shape of an axiom, that

"Order is heaven's first law."

It shows so many departures from uniformity, as to give unmistakable testimony that its regularity is not the result of any blind necessity; but is the appointment of an arbitrary and intelligent Will, that deviates where it pleases. It is so full of numbers and correspondences, as to be like a geometrical problem, perfect in all its parts. Yet its numbers and correspondences are so infinitely varied, as to resemble a strain of music, in which every possible note and cadence falls upon the

astonished ear. It is so full of typical forms, and adherence to them, as to have awakened on one side the strange notion, that all its vegetable and animal forms have, by the unaided energies of Nature, been developed one out of another. It is so full of special ends and adaptations, as to have awakened on the other side the conviction, that the one great object of its Author was the comfort and well-being of the creatures it sustains.

But amid the many truths of the Universe, there are four great moral ones which stand out in bold relief, like the salient points of a landscape—gigantic mountains, which spread their broad breasts to the sunlight, though their lofty peaks reach high above the clouds. These are—

I. The power, wisdom, and goodness of the Deity.

II. The Creature's imbecility.

III. Aberration and Restoration.

IV. Goodness triumphant.

These truths I purpose to illustrate in the order in which I have named them: and while illustrating, to show that Christianity is their focus—the point towards which they gravitate—the mighty centre to which all their various streams converge.

Spirit of Truth and wisdom! whose bright eye kindled primeval light, that as it leaped from star

to star, from blazing sun to sun, from constellation on to constellation, from galaxy to galaxy, awoke exulting motion, and dispelled, for ever, aye for ever and for ever, the pre-eternal darkness of immensity!

Spirit of Truth and wisdom! whose warm breath kindled the intellectual light that burns alike in Cherubim and Seraphim, in Angels and in Man, and ever seeks, though oft by devious ways, to rise again to Thee its Fountain Source!

Spirit of wisdom and benevolence! whose goodness and whose love are radiant in the sunbeams, and vocal in the harmonies of Nature! aid Thou the adventurous effort: help my tongue to shew Thy glory forth: and to Thy name be all the praise! Amen.

CHAPTER IX.

THE POWER, WISDOM, AND GOODNESS OF THE DEITY.

THE wide regions of immensity are teeming with the evidences of God's wisdom, power, and goodness. Orbs, innumerable as the sands on ocean's shore, travelling onwards in their greatness, testify to the greatness of Him who called them into being: and some of these are so vast in their dimensions, that the world we inhabit, this stupendous earth, as we are wont to call it, is but, in comparison, as an atom to a mountain, or a pin's head to the huge Alpine range.

It is impossible for the human mind, cramped by its own littleness, to attain to any adequate conception of the vastness of this material Universe, that stands prominently forth, projected, as it were, from the mind of Deity, as an enduring witness of Creative power. We may place thirty drops of water in an ordinary tea-spoon; and in every one of those drops, as is made manifest by the microscope, not merely hundreds, nor thousands, nor hundreds of thousands, but *millions*, yea, *hundreds of millions*, of living creatures (monad animalcules)

could not only live, but enjoy life; for each drop would contain five hundred millions. Yet, how many tea-spoonfuls are there contained in one of our bays or harbours—how many more in the Irish Sea—how many more in the Atlantic Ocean? and, perhaps, if we could sever that ocean into tea-spoonfuls, those spoonfuls into drops, and multiply those drops by the hundreds of millions of living creatures for which they would provide means, yea,

"Ample room and verge enough"

for exuberant enjoyment,—the vast total would scarcely approximate to the number of those radiant and glorious orbs that stud the regions of immensity —that ever-spangled throne of the Eternal One!

We may take up a fragment of tripoli, or polishing-slate, the size of a grain of sand. That apparent *grain* is composed of the siliceous shells, or shields, of Infusoria of the Brachionus tribe, of which each grain contains its thousands; for there are forty-one thousand millions in a cubic inch. And yet, were the whole earth composed of Brachionus shells, their number would barely approximate to the number of radiant worlds that pursue their destined orbits in the regions of immensity, as witnesses of His Almighty power who called them into being!

Condemn not this as rhapsody or extravagance, but attend to what follows.

Leaving comets, whose nature is so little understood, entirely out of the question, there are already known in the Solar System, upwards of sixty planets, planetoids, and satellites, in addition to that central body which gives light to all. Yet an intellectual being like ourselves, if such there be, gazing from the region of some other star, would observe that central body only, shining with unborrowed light, and be as unconscious of the existence of its attendant planets, planetoids, and satellites, as though no Creative fiat had called them out of nothingness. For high telescopic power is necessary to discern the reflected light of Neptune, the most distant planet of our system which has thus far been discovered: and yet we must have power to see a hundred and fifty-four thousand times that distance, in order to discern the reflected light of a planet revolving around Alpha Centauri, the nearest of the neigbouring stars.

And what is *our* Sun, compared with some of the bodies that glisten in our galaxy. If we considered it of the size of an ordinary orange, we must give to another star—Alpha Lyræ—a diameter of miles. And have we not, analogically, reason to suppose that the bodies which attend that sun in its course are as much greater, or as much more numerous,

than the wanderers that describe their orbits around ours? Or, leaving this out of the question, may we not consider it as a legitimate inference, that the orbs we can discern may be multiplied at least by sixty, in order to approximate to the actual number of the orbs that are really describing their orbits in the regions through which our sight thus travels?

But turn we from isolated examples to the masses they compose. Count the stars which are visible! Man has attempted to count them. With a magnifying power of 180 only, Struve estimated the number which may be *seen* as 20,374,000. But who shall count the star-dust? who shall dare to commence the mighty task? That dazzling ring, which seems on an unclouded night to engirdle the wide heavens, appears to the unaided eye to answer to its name — the *Milky* Way. But advancing telescopic power resolved that milky radiance into star-dust, with which the deep back-ground of heaven appeared to be powdered: and higher power resolved that star-dust into separate and discrete stars. Shall we count the separate points of light in that star-dust, the separate stars in those clusters, when the telescope reveals to us thousands, perhaps millions, in what appeared to the unaided eye a cubic inch of space? We may, when we can count the billion Brachionus shells which compose a cubic inch of Raseneisen, or iron clod. We may,

when we can count the fifteen thousand million monad animalcules which can revel in a tea-spoonful of water. Till then must we be content, in dazzled, baffled thought, to wonder and admire.

But have we reached the climax? Nay, we have merely touched the *outer* verge of being. "*These are a part of His ways!*"—they form a fragment of the works of Deity! If the mind is bewildered, and the reasoning powers are thus confounded, by the contemplation of *one* galaxy, what shall we say when that galaxy is multiplied by millions? The telescope that resolved the nebulous haze of the Milky Way into star-dust, brought other independent nebulæ into view. Spot after spot of hazy light has been discovered, till their number has already reached about ten thousand. And these are not systems, but galaxies: and, as the march of discovery goes on, infinitude seems destined to be revealed as one vast Milky Way, studded with galaxies as numerously as those galaxies are studded with suns and systems; and some of them, perhaps, a thousand times more numerous and more glorious than our own!

What have we here displayed for our contemplation? Have we simply Almighty potentiality, which *can* act if it *pleases?* or have we not the manifest exertion of Almighty POWER?

Come back to the tea-spoonful of water. Con-

ceive of the fifteen thousand million creatures that could inhabit it as worlds! Worlds? No: suns, with their attendant systems! Launch them forth into space. Prescribe their orbits and their distances: and fix the impulsive and controlling force that shall regulate their motions! Would no power be manifest in this? But away with tea-spoonsful! Take up the waters of the ocean in the hollow of thine hand! Scoop them out from their earthy bed, and scatter them abroad, as glittering spray, in the wide regions of infinitude! Divide them into particles, as numerous and minute as the monads they would nourish and sustain; and consider every particle — five hundred million in each sparkling drop—as the representative of a sun attended by revolving worlds! When you can reason yourself into the conclusion that all these could exist, and be sustained, without Almighty power, then may you soon be ready to conclude that light is darkness, and darkness light, and that there is no real difference between the one and the other!

But have we power only? What are the elements of the motions and orbits of this innumerable company of worlds? They are composed of two forces — the projectile impulse, that hurled them into space; and gravitation, that draws them towards the centre around which they revolve. It is by a

proper balancing of these forces—centrifugal and centripetal—that they are prevented, on the one hand, from wandering vagrantly into space; and, on the other hand, from rushing headlong upon the body of their sun or central orb. And could the proper balance be calculated and fixed for untold millions of worlds, a number almost infinite, without the exertion, not only of power, but of Infinite wisdom?

Yet is this all? Far from it. It is of the nature of gravitation that it must be universal. Each particle of matter attracts, in its degree, every other particle. The earth holds me upon her surface by attraction: but I also, in my degree and measure, attract the earth. The different planets and other bodies that travel round the innumerable suns we have been contemplating, as they occasionally draw near to each other, and come into conjunction, draw each other from their proper paths, and cause deviations in their orbits. And were these conjunctions often to take place near the same point of their orbits, the derangements they would produce might upset the balance of the system, and bring on confusion and destructive change. It is needful, then, if stability is to be attained, that the distances and velocities of the different worlds should be so regulated, as that one deviation should constantly act as a counterpoise

to another. And man has calculated the motions of the bodies in the Solar System, for thousands of years to come, and found that the deviations *do* so counteract each other: and that the result is unfailing stability. Man! did I say? No, *men* and *women!* for it is only by a division of labour that such vast and intricate calculations can be made. And one, after the intense mental effort, sickened for death;* and another became almost blind;† and a third went mad.‡ Yet their object was not to discover and obtain, by a variety of trials, a plan by which stability for all might be secured; but merely to see, by united calculations, each of separate parts, whether that system were stable which was already fixed and settled. And if it required a gigantic effort of many gigantic minds to learn whether all the deviations of *one* Solar System were foreseen and compensated, when the distances and velocities of its members were fixed, can we conceive of provision being made for all the complications and contingencies of every system, every constellation, every galaxy in the Universe, amounting to such innumerable millions, without the exercise of

* Lalande informs us, that through the intense effort required for calculating the aberrations to which Halley's comet would be subjected for 150 years, he contracted an illness which changed his constitution for the remainer of his life.

† Madame Lepaute. ‡ M. Lepaute.

Infinite wisdom? Need I pause for a reply? The very Atheist, admitting the premises, must answer—"No!"

And are *power* and *wisdom* all? No! Listen to the echoes of Nature; to their ever-recurring utterances of goodness and of love. "In the system of which thy world is a member, and through which thy calculations can carry thee, let the fact that every orb has received such a distance and velocity as to render it a stay upon the others—let that fact teach thee that the creatures God has formed are guarded with a loving Father's care.

"Look down into the earth on which thou treadest. Analyze its compounds. Calculate its forces. Mark its treasures. Thread thy way back in imagination through the vistas of the ages to the period when life first commenced upon its surface. See successive creations, each pointing upwards to something higher. See treasure after treasure laid deep in earth's bosom, then raised by dread convulsions to its surface, that the spoils of former ages might be laid at thy feet, and all thy necessities be supplied. Will not these things testify that thou art cared for by thy Maker—a God of goodness, who prepared thy habitation ere He placed thee upon it, and provided for thy pleasure as well as for thy wants?

"Mark the chemistry of the soil, and of the

air thou breathest. See how they furnish vegetation with every principle it needs. And mark how the very refuse, which is offensive to thy organs of sense, will, if buried beneath the surface of the earth, by entering into new combinations, re-load thee with abundance, fill the air with fragrance, and feast thine eyes with fresh forms of luxuriance and beauty. Or watch the constant interchange of benefits and blessings between the vegetable and animated world,—how each absorbs the other's poison, and gives back that on which the other's life depends. Will not these, too, testify of God's goodness,—of His tender, providential care?

"Mark the multitudes of creatures that dwell in the sparkling waters, that flutter in the air, or wander on the surface of the earth. See how each is exactly adapted to the existence of the others, and to the sphere of its own being. And mark how each is the subject of *enjoyment* as it fills its allotted station, and pursues that course to which it is impelled by its instincts and desires. And let these, too, teach thee that God is a God of active benevolence, who views with complacency the enjoyments of the creatures He has formed.

"Examine thine own frame, so full of astounding wonders—thy firm supporting bones—thy vertebral column—thy muscular and nervous systems—thy organs of the various senses, with their ramifica-

tions in thy brain. What evidences are here of benevolent contrivance—of regard for thy necessities, thy convenience, thy delight? They tell thee of a God who rejoices in thy happiness, who joys in giving joy."*

The POWER that called from nothingness, is evident in this vast creation—since from nothing nothing could arise.

The WISDOM that presided over creation work is evident through all its minutiæ, in the prevalence of regular and salutary laws, which adapt every portion of being to the rest, and render all their workings so harmonious, their mechanism so stable—yea, stable even by their *in*stability.

The GOODNESS that impelled to *give* existence, and to guide and guard the boon thus given, stands prominently forth upon the earth, glistens in air, and sparkles in the wave, in the provision which is made for the enjoyments and necessities of all things.

Such, then, is the testimony of the Universe; such the first great moral truth which it presents for our reception: and, as the flower gathers up from earth and air the separate principles which unite in its rich perfume, even so, instead of presenting us on this subject with any thing

* "Creation's Testimony," Chapter XI.

discordant from its teachings, Revelation appears to have combined its ten-thousand times ten thousand voices, and given them forth in the utterances—"*Behold, God is mighty, He is mighty in strength and wisdom.*" "*God is good to all, and His tender mercies are over all His works.*"

CHAPTER X.

THE CREATURE'S IMBECILITY.

The gnats are fluttering in the evening sky. Ten thousand gaily coloured insects sport upon the wing, or wander on the bosom of the earth. The birds have closed their vesper hymn of praise, and now are sleeping in the branches of the trees. Young lambs have ceased to bleat, and rest secure upon the grassy plain. The air is odoriferous with the scent of flowers; and all is placid and serene. There is unusual brightness in the sky at sunset. Clouds vie with each other in their warmth of tint—deep crimson mixed with gold. The west is all illumined; and afar the scintillations spread, like a boreal flame, till half the east is kindled with the parting blush of day.

How lovely! yet how frail! All sleep in peace: and many sleep their last. A meteoric change is passing in the regions of the air. The wind that blew so softly from the south has veered to northward; and the frost-king issues forth upon his silent march.

The sun again arises, and looks down upon the

scene: but, oh! how changed. Birds, frozen in the branches of the trees, forget to tell all nature of the advent of the dawn. Young lambs have died upon the grass they cropped. The insect tribes, that, only yesterday, crawled, fluttered, sported in the sunny ray, have lost their brilliant colours, and now lie cold, stiff, and dead. The very flowers have perished. All proclaim the creature's imbecility, that dies because the wind has changed.

But these creatures, it may be urged, are universally allowed to be both frail and feeble. Why choose them as examples? Why not turn to that co-worker with God—that mighty, intellectual being who aspires to be, and whom the Holy Scriptures represent as *created* to be, the governing lord of earth?

Look at him, in his strength!—the fairest, mightiest representative of Deity on earth. See the play of his muscles—the power of his nerves—the strength of his limbs! He cowers the lion with his eye; he fells the ox with his fist! He cuts down mountains with his assiduous labour. He blasts the rocks; and hurls their ponderous masses up into the air. He bridges the foaming cataract, the engulphing stream. He levels hills and valleys, that his vehicles of locomotion may pass swiftly over them. He girdles the earth with a belt of wire, that he may send his messages, in a moment, as it

were, from sea to sea, from shore to shore. By the might of his intellect, he grasps other worlds besides his own. With his telescopes he scans the heavens. With mathematical precision he examines them; and tells the dimensions, weight, and distance of planets and of suns, far, far away in the wide regions of infinitude. He tracks the vagrant comet in its course; traces out with precision its elongated elliptical orbit; and predicts, sometimes with exactness, the time of its return. He penetrates into the secrets of Nature, and resolves her hidden mysteries. He examines things and creatures which his unaided eye was incapable of discerning; and, that he may pursue that examination with unerring and minute exactness, magnifies them with his glasses to ten thousand times their natural size.

Call ye this creature imbecile? Aye, imbecile indeed. Watch him! An irritated insect thrusts into his flesh a prong much finer than an infant's hair. The wound is slight. He cannot even see it. Yet, by the uneasiness which he exhibits, it is evident he *feels*. Inflammatory action commences; the parts become swollen. Too proud to take notice of an insect's sting, he heeds it not. Commencing at that point, an abnormal process goes on, extending its range every moment, till a portion of poison, almost too small to be discerned even with the aid of a microscope, communicates its virus to

the circulating fluids, and the stalwart man lies prostrate!

Watch him again! In the height of his strength he is seized he knows not how. There is something in the atmosphere besides oxygen, nitrogen, and watery vapour: yet, he cannot appreciate it by smell, or touch, or taste. With the most delicate instruments that his inventive powers have enabled him to frame, he can discern no appreciable difference. And yet, instead of inhaling the breath of life, he has been breathing the atmosphere of death. The delicate organs which sustain his boasted strength have lost their tone. Their functions are deranged. The hilarity of laughter is exchanged for the groan of distress, or the cry of agony. He writhes and sweats with racking pain; or is covered with blotches; or laid prostrate with weakness; until a bed of languishing becomes a bed of death!

See yonder! where two men, supposed to be friends, are conversing over the foaming bowl. The heart of one is not as the heart of the other. Deep and hellish malice is concealed beneath the smile of apparent complacency. He watches his opportunity to place in his companion's cup a morsel of powder, the product of a herb of the field. Can that morsel have any influence on the powerful man, who now, his brain inflamed with alchoholic spirit, is boasting

of his strength? Watch him a little longer! His boasted strength is failing! His limbs are thrown into terrible convulsions; and, a picture of terrific agony—he dies!

See again! where two real friends are sipping from the goblet of temptation. With sparkling eyes they talk over the days of the years that are past; and rejoice in this their happy meeting. The scenes of their boyhood come fresh into their minds, and insensibly change, like dissolving views, one into another, till they have lived their whole lives over again, up to the period of their parting. A thought at length strikes the host: "I have a treat for you in store, which has been years in preparation; that keg of spirit is half filled with bruised cherry-stones." He draws and smells. It is fragrant with cyanogen. They sip. The taste is as delightful as the odour. They drink. The pleasant poison is rapid in its operation. Their nerves, in a few moments, lose their power. They reel—they fall —they die!*

And what is this but imbecility,—when the mightiest of creatures with which we, in our present state, have become acquainted, falls before the touch of an insect, a breath of air, or a little of the essence of a herb?

* See Appendix B.

Look we again: and let the man of Science be the subject of our contemplations now. Behold him building his floating castles to ride upon the bosom of the deep. Behold him inventing new powers of locomotion, that he may bid defiance to the wind and the tide. Apt Scholar of Nature! he has watched the operations of the Ichthyan tribes; and with a revolving screw, that imitates the motion of the tails of some of these, he guides his way in majesty through the subject waters. Why should he not? To him originally was given *dominion*. But his sceptre was a sceptre of righteousness; and that sceptre has fallen from his hand. Will the winds and the waves obey him? A little cloud gathers in the distance; and spreads itself athwart the expanded sky. The bellowing thunder lifts its tremendous voice; and, ever and anon, lighting up the almost impervious gloom, the lurid lightning, irradiating all things, seems as though intent to imitate the beams of the now hidden sun. The vessel rides on proudly, amid the elemental war. Yet, the gallant hearts upon her deck, and in her her berths, are not insensible to an oppressive awe and terror. The wild concussion has released the winds that afore seemed chained; and, roaring, raging, whistling, they sweep along the wild waste of waters, and raise her billows to the height of

mountains. Tossed hither and thither, the floating castle will not answer to her helm; but becomes the very plaything of the deep. The storm renews its rage; while man's strength becomes feeble. Dashed upon a rock, the mighty effort of human skill and human ingenuity is broken into fragments, and becomes the sport of the foaming billows; and the thousand hearts that manned her find a watery grave!

Look again! Man weighs the constituents of air; and provides himself a gas that is lighter than either. Aspiring to ascend above the earth upon which his feet are placed, he fills a silken vessel with hydrogen; and, leaping into a car suspended beneath it, he rises triumphantly into the upper regions of the atmosphere. The scared eagle screams; and flies hurriedly to her nest upon the mountains. But the winds will not own the control of the invader. Like rebellious subjects, they jostle him about in his new kingdom. He releases a portion of the hydrogen that holds him up at such an altitude, and brings himself nearer to his native earth. But the invaded denizens of the upper realms pursue him. Driving onward in their fury, they dash him about as though his ærial machine were but a feather; and, sweeping him onward to destruction, tear his balloon in pieces,

and leave him on the green bosom of his mother—a mangled corse!

Listen now to that plaintive wail, that comes pealing over ocean, and mingles with the soughing of its waves! A gallant ship was riding on its tranquil bosom. A hundred hearts beat joyously upon its deck, and caught the rapture with which it seemed to plough its way upon the briny deep; while the sun shone brightly on the sparkling waves, and all was brilliance and enjoyment. But suddenly there was a cry of "fire!" Man's instrument—his minister—rebelled against his power; and though an ocean of waters was around him, he could not bring it into subjection. It raged below! It mounted to the deck! It seized upon the boats! It spread, devouring, everywhere! And there was no escape; no chance of rescue; no pathway o'er that wilderness of waters. Parents and children clasped each other in agony! The stalwart became weak; the stout-hearted trembled! Hope sickened and died; as onward, rushing, roaring, crackling, those dreadful flames, combining with the waves that lately looked so joyous, but now seemed angrily waiting to engulph them, offered but a choice of death, at once excruciating and horrible! Oh, human hearts! beating, indeed, in sympathy, but each one feeling its own bitterness,

which none other could share! Oh! thoughts of home, and kindred, and expecting friends, whom their eyes should see no more, and whose accents should never again fall upon the strained and listening ear!—What years of agony were compressed into that moment of mingled dismay and terror! What unutterable sorrows were embodied in that wail, that note of imbecility, which, mingling with the echoes of the waters, now dies upon the shore!

Look yonder now! A man of Science is seated in a quiet room, with a pen in his hand, and ink and paper before him. A charcoal fire is burning in a chafing dish; and every window and every door is closed. In the strength of vigour and intellect, he is noting down the effect, on his pulse and on his frame, of the increased quantity of carbon which the atmosphere of that room contains. Clear and distinct is his writing for a time, and valuable to Science will be the results of the observations he has made; but the lines at length become less and less even, and the characters less clear. Why does his hand tremble? Why does his eyesight become dim? Why does he pant so rapidly, and yet so heavily? Watch him! He attempts to write; but the pen refuses its office. His head falls from the hand that has been supporting it, but now can

support it no longer; and the mighty, imbecile creature, suffocated, dies!

And look yet once again. Another man of Science is in his laboratory, with all his apparatus around him. He has been experimenting in the making of explosive materials—reducing gases, by combination, into a solid or liquid state. He has succeeded in forming one of most tremendous power. It is quadro-chloride of nitrogen. With what triumph he looks into his crucible! Gases of some hundred cubic yards in dimensions are condensed into a drop of apparently oleaginous liquid. How carefully he lifts his treasure, in order to transfer it to a glass globe, wherein it may be safely closed up from external influence! Yet not too carefully. The chain with which he thought he had bound those gases—the chain of combination—breaks. The drop explodes in the transfer! The experimenter is thrown to the earth! The roof of the laboratory is blown into the air! and every bit of glass in the immediate neighbourhood shattered into fragments!*

Such is the imbecility of the highest of material creatures. All things are his servants—given and ordained to minister to his wants—to answer his

* See Murray's "Sketch of Chemistry."

enquiries — and to gratify with knowledge his investigating powers. As a co-worker with God, he is able to make use of, and enjoy them: but the moment he seeks to command or to alter, his imbecility makes manifest that *he* is not their Lord; and that the elements of matter are not under his control.

And is not this great truth consentaneous with the declarations of the written Word of God? Yea, rather, is not Christianity its very converging centre? From the beginning of Genesis to the end of the Apocalypse, the Holy Scriptures teach it in a thousand forms. They tell us, indeed, that he was created to have dominion over the other works of God's hands, in this world which was prepared for his abode; but that, in consequence of that which will come more immediately under consideration in our next Chapter, he lost his dominion, and became shorn of his otherwise abiding strength. We see him subject to physical laws, the infraction of which results in accident, disease, and death: and these are but the outward symbols of the moral law, which he has broken, and breaking which, he became so sunk in imbecility. And while Nature testifies, with all her multitudinous voices, that her laws have not merely an Ordainer, but an

Administrator, the Holy Scriptures agree with the declarations embodied in the utterances of those unnumbered voices; and whatever may be the secondary cause of what the world calls accidents, refer them to the first cause in the Administrator's active or permissive will—"THOU *takest away their breath—they die!*"

CHAPTER XI.

ABERRATION AND RESTORATION.

If there is one truth of Christianity more repugnant than all others to the unrenewed heart—one doctrine against which, more than all others, the pride of the human intellect rebels—it is that which is involved in the name of Aberration. The grave declaration that man is a fallen creature—that he has departed from the orbit of rectitude—is the chief objection of the Sceptic, the stumbling-block of the Philosopher, the rock of offence of the self-righteous advocate of human virtue. And yet that doctrine, which these men represent to us as discordant with the teachings of the Universe, is exhibited, if we will but look for it, in every province of the kingdom of Nature.

In all that we can see, or hear, or touch,—in every thing the telescope has brought within the reach of our vision, or the microscope enlarged to the sphere of our apprehension, we have exhibitions of *instability;* for immutability and stability are attributes of God alone. The delicately-poised outer rings of the planet Saturn, which are kept from falling to its body simply by the equilibrium

of instability, are, in some respects, a type of all Creation. *Change* is written everywhere. The atmosphere, with its ever-varying clouds—the starry host, ever changing their positions, though apparently, from the distance, in so slight a degree as only to be appreciable by the nicest mathematical calculations, remind us of the words of one who said, in reference to those garnished heavens, —speaking to Him with whom a thousand years are as a day,—"*As a vesture shalt Thou change them, and they shall be changed; but Thou art the same.*" The unstable bosom of the restless deep, the

"Ever rolling, ever murmuring sea,"

so often considered the most changing object in Nature, is, perhaps, after all, the best symbol of stability we can meet with. For, notwithstanding the ebb and flow of the tide, which makes such an *apparent* change, its *mean level* has but little varied, through vast geological ages, while the "solid ground" has been subjected to upheavals, depressions, and oscillations, on the most enormous scale, changing the contour of our continents, and altering the whole face of Nature.

Look at that stalwart figure, that, with unrelaxing labour, has gone through the various avocations of the day! Where is the fire with which it opened

its campaign this morning? Where the ardour with which it sprang, as it were, elated, to its apppointed toil? The over-strained muscles seek repose. A heavy, dull forgetfulness comes creeping over the senses. The eyelids involuntarily close, to shut out the busy light of day. There is a temporary aberration of the powers of life, which needs a restoration, or life's functions could no longer be performed; and

"Tired Nature's sweet restorer, balmy sleep,"

completes the operation.

See in some of the inferior animals how vastly more extended is that aberration. They sleep so long, that we, of warmer blood, who require such daily replenishments of carbon, to keep up the animal heat, are inclined to marvel how they can live so long without food; and sometimes sceptically examine them, to see if they be really alive or dead. Yet their periods of hybernation alternate with periods of active wakeful life—their aberration with restoration, perfect and complete.

Observe the sunset upon yonder arctic shore. It seems to linger fondly on the verge of the horizon, as it bids farewell to the scene it has so long gazed on. And to us of temperate and torrid latitudes, sleeping and waking, sleeping and waking, again, and yet again, through the long dull period of half-

yearly night, it would seem as though that sun never again would enliven us with its ascending beams, and night would last for ever. Yet the restoration is as constant as the aberration—the six-months' night alternates with a six-months' day.

Watch the aberration of Nature, when the period of summer is ended, and the harvest is past. The warm pulse of her life appears to have ceased its throbbing. The luxuriant foliage, that lately rejoiced in the sunlight, and spread its green wings exulting on the wind, has fallen to earth's bosom. The trees spread their bare and ghastly branches to intercept the sighing of the blast, as it hurries heedless past; or catch the feathery snow, and seek in vain to wrap themselves up warmly in that virgin attire. Vegetation comes nearly to a stand. The seed refuses to germinate —the grass to grow. The desolate earth locks up her hidden, undecayed treasures in a shell of ice, as though fearful that her powers had departed for ever, and she should obtain no more. But the restoration is as complete as the aberration. The spring comes forth again in its beauty. The chains of the ice-king are broken. The seed, whether fallen or *consigned* to earth, attracted by the wooing sunbeams, puts forth the green blade or the gay leaf. Hills and valleys luxuriate in beauty: and Nature laughs again for joy.

Aberrations and restorations are here continually before us, so great, as almost to amount, in the comparison, to all the difference between life and death. Yet, because they are so continually exhibited, we give them the name of *alternations;* and seem to lose sight of the great truth of which they would, were they only occasional, more forcibly remind us, pointing us, by analogy, to aberrations and restorations in the moral world, of a higher and more important kind.

But the aberrations and restorations which the physical Universe exhibits are not *all* of so *regular* a description. We may calculate, with exactness, the ebbing and the flowing of the tides of *ocean;* for the sun and moon, in constantly-recurring periods, draw the waters into a protuberance, while the centrifugal force which keeps the earth rotating, seeks as constantly to restore the equilibrium thus disturbed. But not so constant and undeviating is the action of the tides of *air.* It is true that the principle of gaseous diffusion, which tends to an equallizing mixture of elements, operates as a constant check upon baneful results. It is true, also, that, as regards its principal components (oxygen and nitrogen) the atmosphere will constantly exhibit the same proportions, whether we take it from a mountain or a valley, from a swamp or a raised plateau, a forest or a mine, a

crowded city, or a luxuriant plain. Yet there are other elements besides these in the atmosphere, whose occasional aberrations are sufficient, if it were not for restoration, to make this earth, now so fertile and so lovely, little better than a charnel house.

Look at that crowded city, whose million inhabitants are constantly inhaling the oxygen of the atmosphere, and giving out carbonic acid—poison, deadly poison—which the lungs refuse to breathe,—the very wind-pipe being so constructed, as, without thought, effort, or direction on our part, to close up its own aperture, that it may not be inhaled. Look at their fires, for culinary and other purposes, which are consuming oxygen, and generating carbonic acid, as rapidly as they. There is aberration here so great, so deadly, that, were it not for restoration, the million inhabitants of that devoted city, with all their domesticated companions, would in a very few days be stifled, suffocated—their lungs unable to release the used-up carbon that had gathered in their veins. Thus would they fall and putrify upon the bosom of the earth; and breed a pestilence for a hundred cities round. And *how* is the restoration made? The gentle zephyrs, the laughing winds, the boisterous gales, carry the weighty burden to the region where it is burdensome no longer. Vegetation takes up the

carbonic acid with which the atmosphere is laden; and, decomposing it, retains the carbon to add to its own substance, and releases the oxygen again: and thus from the effete, the used-up breath of man, provides a banquet of luxuriance and beauty! Is not this *aberration* and *restoration?*

See yonder, too, where deadly pestilence extends its ravages from house to house. The air is poisoned; and the noxious venom, heavily loading the once buoyant atmosphere, now seems as if it were settling there for ever. There is a death-like stillness all around—a stillness which betokens and increases death. Trees hang their broad leaves listlessly from their branches, and stir them not. The very birds appear to have entered into a compact with the winds, which, blowing where they list, still blow not there; and cower in muteness o'er their callow young, lest by the motion of their wings they should set the stagnant air in motion. How fearful is the aberration here. Men have died so rapidly, that they have long been thrown, uncoffined, into a common grave, and now there are scarce any left to bury them; while pregnant and more pregnant grows the air with the foul steam of death. What can restore the glow of warm hilarity—the joyous beating of the pulse of health? Mark ye that thickening cloud, which hangs impending over the long devoted city? Conduction

leaps to the encounter; and seizes on the lightning for its sword. Heaven's loud artillery reverberates among deserted homes—homes which have lost their inmates. The rain falls down in torrents; and the winds, gathering their strength, rush onward through the streets and avenues, and sweep between the branches of the trees, that laugh, rejoicing in the storm, to think their leaves are stirred once more. The stagnant air dispersed to the four winds, health is restored; the pestilence is gone.

Hark! to that long, loud peal of subterranean thunder — that crash so fearful and so terrible! The solid earth is shaking! Man, aghast and panic-struck, feels as though his whole mental nature had undergone a sudden fundamental change. His very symbol of stability, which it was part of his constitution to reckon as firm and abiding, is rocking beneath his feet, upheaved by some internal convulsion. The giant mountains tremble; and the sea, as though affrighted, rushes on the shore, —wildly rolling, tossing, heaving, reeling, as if under the influence of intoxication. Forests, houses, temples, palaces, topple down upon their inmates: and in a thousand forms death reigns and triumphs. This is, indeed, a fearful aberration. Yet, even here, the restoration is complete. The wild, internal waves, that, violently struggling, altered the contour of earth's surface, cease their

rage. Another beach, another harbour, may appear in place of that where late man's ships lay sheltered. The coast-lines may be altogether changed; but the new ones are, at least, as permanent as their predecessors. The surface settles down in some new shape; and human habitations lift their heads above the buried past.

Hark! yet again. Loud detonating sounds from yonder mountain tell of woes to come; and fill man's heart with terror! Yet again the murmuring, rumbling, threatening sound comes forth, louder and louder; and a lurid flame, as from the very bowels of gehenna, shoots wildly up to heaven. A brief, dread pause adds horror to the scene. Then louder still the smothered subterranean thunder roars; while from the mountain's cone a stream of molten lava is disgorged, and pours impetuous down its sloping sides. How terrible its course! Where, where shall aid be found? Man's hopes and cares are vain. Forsaking all, he flies from the invader, that, heedless of the products of his toil, rushes along o'er forest and champaign, o'er field and grove, o'er rock and cultured plain, hamlet and city, castle, tower, and temple; till all are swept to ruin, or engulphed beneath the fiery sea. And can there be a restoration here? The molten deluge cools—consolidates! The atmosphere disintegrates its surface. Winds carry on their wings the seeds of

plants, that germinate and live, and shed their seed and die, and add their products to the soil; until the face of that once fiery mass luxuriates in verdure: while trustful man, all hopeful for the future, builds anew his cities on the sites of former wreck and ruin.

But come we higher. Watch that beauteous orb, the lamp of night, that constantly attends our earth in its passage round the sun. How constant, how unvarying is her course, though with ever-varying face, now dark, now crescent-shaped, now round as warrior's shield, she keeps her track among the brilliant sisterhood of worlds. Unvarying? Calculate her motions backward! Let her eclipses be the indices that manifest her REGULARITY! The periods of their recurrence are reduced in length, although the change is small; and these declare that the orbit she describes is nearer to the earth. What? Is there aberration in the heavens? Is attraction overbalancing centrifugal force? Is the time approaching, though yet far distant, when the moon and the earth shall dash against each other? Where, then, are we to look for stability; or where for restoration? Watch we a wider orbit. See where the earth pursues its destined way among the planets of the Solar System. The eccentricity of *that* orbit varies. It is sometimes more circular

than at other times. The variation is ages in attaining its greatest degree; and ages in coming back to its minimum. It has now been long upon the decrease; and with it has decreased the sun's disturbing action on the moon, which, thus left to an increase of the earth's attraction, has had her motion accelerated, as a counter-balance against its power. These aberrations, too, are periodical; but the periods are too vast for our contemplation: and the restoration, in the end, is perfect and complete.

Ascend we higher still; until we reach an altitude from whence we can obtain a bird's-eye view of the motions of the Solar System. How orderly, how unvarying are their paths, as, in silent grandeur, they pursue their way, marching onward to the music of the spheres. Orderly, unvarying, said'st thou? Watch them more narrowly. See yonder planets! For years there has been scarcely a deviation in their orbits; but now they are approaching to conjunction; and, by their mutual attraction, drag each other from their proper path. Is not this a fearful aberration? And see, it is increasing, rather than diminishing! Other planets are congregating on that side of the central light; while a huge comet, wandering vagrantly along, drags them still farther out; until the centre of the masses of the

system is far outside the centre of the sun. What fearful aberration do they now exhibit! The heavenly wanderers, thrown into confusion, have widely forsaken their accustomed paths. Their planes are rocking up and down. The general centre totters, trembles, reels! ....Heard ye the roaring of the billows of confusion, as they dashed upon the outer shores of being—the break-waters of the Universe?..... .....A giant form, whose name is RUIN, lifting his terrific head amid the storm, raises his voice, and shouts, "The Universe is mine!" But hark! another voice, more potent, though less terrible, —"Hitherto shalt thou come, but no further; and here shall thy proud waves be stayed." A counterbalancing attraction, ever ordained to check these wondrous aberrations, draws back the wanderers to their ancient orbits; and every world, restored to its accustomed path, runs on its way rejoicing.

And, now, let us mark the results which we may legitimately draw from these exhibitions of aberration and restoration in the physical Universe; and let the Sceptic, who declares the great doctrines of Christianity to be discordant with the teachings of Nature, hide his proud head with shame. The Universe is an outward manifestation of the great Self-Living One; and physical phenomena are only

sacramental symbols of great moral realities. These aberrations and restorations, then, should point us analogically to man's divergence from the path of right; and that counter-attraction, the attraction of the Cross, which wins him back to the rectitude in which and for which he was first created. And thus again does the physical Universe set forth an all-important moral truth, which finds in Christianity its great converging centre.

CHAPTER XII.

GOODNESS TRIUMPHANT.

Heard ye that cry of pain? How brief was its duration! The gushing fount of joy—the joy of life—the flood-tide of existence—sweeps along, heedless of all obstructions that disturb its placid course. The transient note of woe is lost amid the swell of Nature's harmonies, that from ten thousand times ten thousand voices upsend to heaven, in music loud and clear, the general note of joy! joy! joy! and tell alike to denizens of earth, and air, and ocean, that, in despite of care, and toil, and woe —goodness is still triumphant!

Mingled with this world's landscapes everywhere are signs of evil, physical and moral; but these are constantly accompanied by ever-running streams of goodness—goodness modifying evil—goodness overcoming evil—goodness triumphing over evil, and rendering its existence subservient to benevolent ends. That symbol of death which lays the frame prostrate, and causes a temporary cessation of our active powers—sleep, mysterious yet refreshing sleep—death's forerunner, and yet life's restorer,

renews the wasted frame, and is conducive to the strength and pleasure of re-awakened activity. Exhaustion, painful though it be, contributes to the pleasure of replenishment; the pain of hunger to the enjoyment of our food.

"The thunder-storm, that wields the bolt of death, refreshes the parched earth, and purifies the air. The force of gravitation, which causes concussions, and renders a fall often fatal, serves to keep all moveable things stable on the surface of the earth; otherwise every living creature might be thrown off by its rotations. The winds, that sometimes concentrating their forces produce storms and hurricanes, or lash the sea into foam, and carry down our floating castles to destruction, bear on their bosom the moistening vapours that render earth fertile, and air soft and balmy. They disperse, too, the pestilential exhalations that arise from fœtid and decaying matter,—thus shedding from their wings the dews of life; and carrying away the vapours of death, to be purified and rendered harmless by fresh chemical combinations. Yea, even those convulsive movements which arise from unseen workings in Nature's dark laboratory,—earthquakes, oscillations, and upheavings,—which sometimes rend the world with ruthless power, and carry wide destruction in their course, are merciful provisions against the wear and tear of ages, which,

by their disintegrating processes, would level the earth into a plain, and cover it with ocean."*

It is impossible for us to trace the effects, whether beneficial or otherwise, of orbital deviations; for though we may, by close and accurate observation, trace those deviations, we cannot even *guess* what, to the uninvestigated surface of those orbs, the necessary result may be. But though the distant heaven *conceals* results, our earth *reveals* them. We *can* lift the veil which is thrown over the history of great geological eras, and see that every convulsion through which our earth has passed, is productive of benefits to man, under the guidance of HIM who "*weighed the mountains in scales, and the hills in a balance.*"

Come with me through the vistas of bygone ages, —ages to be counted not by years, but by myriads of years,—and gaze upon a few of the important scenes of the unburied past.

Look at that island-dotted ocean! There is comparative silence on its waters. Yet the winds are there; and the tidal, or tide-generating, swell moves round the earth, as the attractive power of the sun and moon lifts up the yielding surface as it passes. And there are other signs of motion, and of action too. Numerous zoophyta and

* "Creation's Testimony," Chapter X.

polypifera are at work beneath. The coral insects gather from the impregnated waters materials wherewith to construct their abounding reefs, the foundations of future habitable land. How vast are the results of industry and active combination! A dread convulsion upheaves the surface of the earth above the waters, while porphyry and granite burst molten through the broken floor. But that convulsion has upheaved the coral reef along with the detrital deposits of ages; and mountains of limestone, invaluable gifts to a yet future being, are exhibited as the product of a little insect's toil.

Mark we another scene! The earth has made progress since we last beheld it—the progress of untold ages. Far to the North, are the tall grey peaks, the slaty summits of old Cumbria's mountains. These are joined with Wales, and Mona, and a part of Ireland, to Old Siluria, Devonshire, and Cornwall, and the South of France, to form one island of large proportions, while to the east is a huge coral reef, enclosing a basin or lagoon upon the site of Warwickshire and Staffordshire, and parts of the counties of Worcester, Gloucester, Leicester, Nottingham, and Derby. The ocean now teems with active life: and the trilobites, with numerous other extinct forms of being, wander amid the coral reefs on which its waves dash proudly. But see! What massive vegetation covers at once the

basin and the land. Algæ and fuci of enormous size, gigantic conifers, and calamites, and equisitæ, spread their gay branches to the sunlight, while monstrous ferns, and club-mosses, and thick, unwieldy creepers fill up the interstices; and make the earth and the borders of the sea one mass of varying green. Who needs it? It is *waste.* There is no creature that can feed upon it. No cattle browse upon the hills and slopes of old Siluria. No animal, is living to consume it. It is washed, year after year, and period after period, down the mountain slopes into the wide lagoon; and, mingling with its algæ and fuci, forms a thick entangled mass, impervious to the finny tribe, and which even the marine mollusc scarce can penetrate. ....What was that wild concussion, which seemed as though it shook the firmament? It strikes the earth from north-west to south-east; and soon is followed by a muddy stream of agitated water, pregnant with sand, and clay, and debris; that, splashing, dashing, foaming, deluges the land; and filling our lagoon, buries with sediment its heap of vegetation, shutting out the influence of the sun's light, heat, and actinism. Huge mountain chains* are thrown up, chiefly in what is now the continent

* This convulsion threw up the southern part of the Vosges; and may also be traced in southern Asia, and along the line of the Alleghanies, in North America.

of Europe, impregnating the seas* with clay and iron: and the molten stream, as it bursts through the floor of the ocean, throws down from its sloping sides the gathered sediment of ages, filling the waters with its thickening particles, and spreading destruction all around.

Was this an evil? Had there been a waste of vegetation? And was this crowning convulsion but a waste of life? Pass onward a few ages—ages marked not by years, but by eons, dispensations, what man once would have called eternities! Behold, as the result of that buried vegetation, the coal fields of Staffordshire and Leicestershire; see in their iron nodules the result of the impregnated waters; and, marking these, confess that goodness is triumphant—benevolent forethought, out of apparent evil, producing lasting and incalculable good.

We will take one more gaze at the past history of the earth; and choose the period when it was nearly ripe for its consummation—the habitation of that moral and responsible creature who was foreordained to be its occupant before its foundations yet were laid.

The sun shines brightly on the scattered isles that stud the European sea—an archipelago of

* See Appendix C.

islands, that bask rejoicing in its light. The scene is lovely. It is animated; and not wholly voiceless. There are fruit-trees bearing stone-fruit, though the apple and the pear are absent; and animals of the squirrel and the monkey tribe, bearing some resemblance to their present congeners, leap sportive in the branches. Oxen and sheep there are not; but mute birds are there, gay in their plumage, though guiltless of awaking the inspiring song. Grasses, herbs, and the whole genus of the rosiacæ, or flowering shrubs, are absent; for why should there be flowers of rich hue and perfume, where there is no intelligent agent to admire their forms, and be gratified with their odours? Yet there is happiness in the enjoyment of life; and nature is lovely, though mute, and in her muteness appears to ask, lovingly, for an intelligent creature that can give her voice, and upsend her thankful praises to the Author and Giver of all.

Does the sun linger on his way? or has the earth slackened her rotations, that she may catch, yet a little longer, the warm influence of his beams? Ah! well they may; for never again shall the sun gaze upon that archipelago of islands; never again shall that wide and beauteous landscape lie basking in the morning or the mid-day light.

——There is a knocking at the floor of the European sea, loud as though intent to send its echoes

to the distant stars! The subterranean earth is rent: and through the opening chasm the fiery deluge rushes up aloft, heaving the floor of ocean on its way! The Alps! the Alps have sprung into existence, high towering in the turbid atmosphere! Another crash! All Asia is convulsed! The Persian, and the Affghanistan chain, and the gigantic Hymalayas rise! while in the west, amid Columbia's waves, the Chilian Andes leap exulting into being! The waters, hissing, steaming, leave their native bed, and soar into the carbon-loaded atmosphere; and darkness and confusion wrap the world as in a winding sheet!

Is chaos come again? Ah no! there never was a chaos. It is a myth—a fable. It is a Greek, and not a Hebrew term. The earth, indeed, is without form and void, (invisible and unfurnished); and darkness is on the face of the great deep. But every movement of that molten mass, of that apparently uncontrollable surge, is guided by the finger of Omnipotence — of Infinite Benevolence and Wisdom. For such, as has been often shown at length, such is the contour of our continents, and such the position and aspect of our mountain chains, as is calculated to confer the greatest amount of good upon the greatest number of intelligent and sentient beings.*

* See Appendix D.

And hark! amid the confusion of that wild and matchless scene, a voice is heard—a voice of power and majesty—"*Let there be light!*" Heat radiates into space. The cooled atmosphere, no longer capable of holding in such abundance its carbon and its watery vapours, precipitates them to the earth; and light, though yet but dim and indistinct, peers through the late impervious gloom. Again, and yet again, the Creative fiat sounds; and at the six days' end, the earth, again covered with gay inhabitants, clothed with new verdure, and filled with glowing beauty, greets the great eye of light, and laughs rejoicing in its beams: while man, co-worker with his God, His moral image, gathers the incense of a glad Creation, and in the censer of inspired thought, offers it in gratitude to Him who is the Author and the Giver of all good.

Was this convulsion evil? Look beyond it; and behold triumphant goodness—goodness overcoming evil, and making it subservient to the highest ends. And let these exhibitions of triumphant goodness in physical transactions and phenomena, point us to the greatest of exhibitions that ever occupied the stage of time—point us to its highest development in Christianity—the great centre towards which, and in which, all its lines converge. For these physical transactions and phenomena are but the visible transcripts of a great moral truth—*goodness triumphant over evil.*

Man falls! By moral aberration he defaces the bright image of his God, in which he was created; and who shall bring the lapsed one back into the orbit of righteousness—eradicating evil? Wonder, oh heavens! and be astonished, oh earth! 'T is God himself who undertakes the work! 'T is God himself fulfils the broken law! 'T is God himself becomes the Sacrifice—atoning for the sin! and by this exhibition of His love, attracting back the wanderer to His bosom. Oh, Bethlehem! Oh, Calvary! amazed at your disclosures, astonished spirits stand in wonder wrapt; while worlds on worlds, amid the interminable realms of space, catch the glad anthems of the heavenly choir, and shout—"GOODNESS TRIUMPHANT!"

Did I not hear a voice—the voice of far-off ages—the echoes of an era yet to come? A thousand thousand join in the glad acclamations; and ten thousand times ten thousand swell the strain—"Hosanna! Hallelujah!"

Fair as light—bright as the radiance of a thousand stars, converging and commingled—lovely as though the Source of loveliness were there; a glorious city bursts upon the view; its habitants—the happy and the free—chanting, responsive, to a hymn of praise—Hosanna! Hallelujah!

What is the burden of their joyful strain? 'T is evil banished, sin and death cast out, and goodness

now triumphant! and there seems new rapture to enkindle in their hearts, as on the past they dwell, and tell of woe, once prevalent, now banished from the Universe; and ever and anon, amid the pauses of that rapturous song, the chorus swells, and reaches to the stars, rolling, reverberating through immensity—Hosanna! Hallelujah!

Whom sing they? 'T is the manifested God—Creator, Renovator!—He who spake the Universe to birth; and, when the blight of sin had touched it, purged away the stain with His own life-blood!—He who left the throne of glory, unsurpassed, ineffable, to bear the sinner's burden, and become a Ransom for the lost! And as they sing how He became the child of poverty, the child of want, the meek, the sorrowful—how He endured the nail, the cross, the spear, the agonizing thirst, the pang of death!—upward, with rapturous shout, the chorus springs—Hosanna! Hallelujah!

Hark! the glad strain swells wider! Now they sing Him risen, and exalted to the throne—a Prince and Saviour, to bestow on man repentance and forgiveness!—Him, the Bond that re-unites the Universe to God, immutably secure!—Him, the great Spirit-power, that urged through matter His all-conquering way, assimilating all things to Himself—till, sin and death destroyed, each living thing could join the rapturous echo that now swells again,

rolling, reverberating through the heaven of heavens, —Hosanna! Hallelujah!

Hosanna! Hallelujah! Yes, the cloud, the morning cloud, that hovered o'er Creation, is vanished now for ever! Yes! the vestibule, the prelude-passage to immortal joy, is passed — the temple gates are opened wide, and on the front of every spacious hall, of every court, and every pillared dome, is legibly inscribed the glorious truth—"GOODNESS TRIUMPHANT!" Shout, then, every voice in Nature; join your notes, harmonious, every living sentient thing, join with the music of the rolling spheres—the harps of glad Eternity—the songs of Angels round the throne—the joyful ring of music from the starry hosts—suns, systems, constellations, galaxies—the echoes, loud, melodious, that resound from the far-distant nebulæ—join, join the universal song—Hosanna! Hallelujah! God is good; and goodness is indeed triumphant now! Hosanna in the highest!

THE END.

APPENDIX.

APPENDIX A.

On the first of June, 1857, the Duke of Cambridge paid a visit to Birmingham, to assist in the ceremony of opening Calthorpe Park. On that occasion, a number of triumphal arches were erected for his Royal Highness and the accompanying train of Noblemen and Gentlemen to pass under. During the erection of one of these, not far from my own residence, a number of boys were assembled, one of whom, pointing up to the arch which the workmen were then decorating with evergreens, exclaimed, "Is that the Duke of Cambridge?" A loud and general laugh from his companions followed the simple inquiry: but, undaunted by the jeers that greeted him, the little fellow continued, "Why, my mother says it is; and surely she ought to know better than you."

"Bless the child," was my involuntary exclamation, when one of my own little ones related the circumstance to me; "his faith is worthy of imitation; and his mistake is only that of many good and earnest men. He believes what his mother says, just as implicitly as they believe what God says; but both alike are mistaken as to the meaning which certain words were intended to convey."

It was a great misfortune, at once to Religion and

Geology, that, impressed with the conviction that the teachings of the two were not accordant, Christian men, for a long period, held aloof from the close and earnest study of those stony records which the crust of the earth presents. Mistaken, but generally received, interpretations, of certain phrases in the early chapters of the Book of Genesis were so incorporated with our religious opinions, that it was a difficult task to separate truth from error; or to dissipate the belief in the interpretation, without shaking the belief in Scripture. Nor has the Scientific opponent of God's truth failed to take advantage of this state of things, by always endeavouring to represent the interpretation as the exact meaning of the text. Yet, with just as good reason might the little assembly I have alluded to above, have endeavoured to fortify their little companion in the belief that he had not mistaken the meaning of his mother, but that she really *had* said the arch was the Duke of Cambridge, in order to bring his mind to the conviction, when he discovered his error, that his mother had not spoken the truth.

The tenacity with which these opponents of the authority of Scripture cleave to old interpretations is remarkable. They can scarcely be persuaded to look at the early portions of the Bible in any other light than that of past centuries, or to allow even of the possibility of its words meaning any thing different from what they were supposed to mean two hundred years ago. They have come to the conclusion, that the five books of Moses

are Hebrew legends; and, notwithstanding philological research, and physical Science, are making such rapid advances, giving us every year fresh illustrations of the manner in which the Word and the works of God harmonize with, and illustrate each other,—the *will* being perverted, they cannot take the trouble of reëxamining the grounds of their convictions, but hold the early Scriptures to be "Hebrew legends" still; and affect not to understand how a man can possibly believe the Bible, and yet believe that the Universe is more than seven thousand years old. They have been obliged to "*read again*" the *stony records* which they quote against us; and to interpret their inscriptions afresh, times almost without number. And surely, if additional light enables *them* to understand more clearly what earth's strata and their fossils teach, we may be allowed, now that fresh light has been thrown upon the inscriptions of the Inspired page, to believe that Moses does not profess to fix the date of the first Creation; but merely, in the first verse of Genesis, announces the fact that God originally *created* the heavens and the earth; and that there may have been a chasm of indefinite ages between the first Creation and the period when, coming down to that which concerns our own race, he tells us that the earth was "*invisible and unfurnished,*" (*English version,* "without form and void"); and darkness was upon the face of the deep.

In the Appendix to a work published by Dr. Baylee, of Birkenhead, entitled "Genesis and Geology: the

Holy Word of God Defended from its Assailants," there are some remarks so intrinsically valuable, and so much to my purpose, as giving sufficient reasons for the former imperfect Theories of Christian Theologians, that I take the liberty of quoting them.

"The history of Christian theology is one of the most instructive chapters in the history of the human mind. The more we examine, on a large induction, the history of the human race, the more the mind is lost in admiration of the wonderful government of God. Just as in the material conditions of the globe He has taken ages to produce one geological result, so in the intellectual world He has taken generations to produce one great result. It would be easy to illustrate this truth by the history of philosophy, or by the various political conditions of the world. At present, however, I shall confine myself to Christian theology, with its immediate antecedents.

"Christian theology, as a scientific system, is the offspring of the Jewish theology—elevated, modified, and corrected by the new revelation in the New Testament, and subsequently greatly modified by the Aristotelian and Platonic philosophies.

"When the Jews were carried captives, they had a great influence upon the theology of the world. The decrees of Nebuchadnezzar and Darius were public documents which could not fail to attract the attention of all thoughtful men. The testimony to the One Great Supreme would find its echo in many a heart.

"It was after that captivity that the most eminent

Grecian philosophers travelled in the East. The philosophy of Greece was largely indebted to Judaism.

"Subsequently, the Alexandrian conquests produced a new state of things. Greece politically became nothing. Rome was rising into universal empire. Egypt became the nursery of a new philosophy. The ancient mythology of Egypt combined with the Oriental and Greek philosophies. The new system substituted allegories for myths. Inductive reasoning was little esteemed. Speculative allegorizing took in a great degree its place.

"Judaism was greatly influenced by it. With the Old Testament in their hands, the Jewish philosophers could not altogether depart from sound reasoning: yet whoever will take the trouble of reading the allegorizings of Philo upon biblical history, will see how far the imagination had misled the judgment. Notwithstanding this great defect, the writers of that school are full of profound thoughts. There are many remarkable coincidences of thought and phraseology between St. Paul and Philo. Yet it is in the highest degree improbable that either had seen the works of the other. St. Paul is not Alexandrine in his mode of dealing with Scripture, although he occasionally approaches to it.

"The Septuagint version was greatly affected by Egyptian philosophy and the current Jewish system of religion.

"In considering the formation of a Christian theological science, we are first to bear in mind the direct teaching of our Lord and the Apostles; then the character of the New

Testament writings; then the previous education of the early converts, whether Jewish or Gentile; then the imperfect version of the Old Testament, which was the only one accessible to the leading minds of the early Greek Church; and lastly, the character of the early dogmatic and other controversies.

"Not one of these elements contributed to the consideration of the connection between Scripture and physical science.

"The mind of the Church was nobly exercised on questions respecting the nature of Deity, and subsequently in the Western Church respecting the operations of Divine grace—but questions of physical science were altogether overlooked. The necessary consequence was superficial views upon the subject.

"At the revival of literature under Charlemagne, an entirely new state of things had succeeded. Latin was the exclusive language of Western Europe; scholasticism was little concerned with physical inquiry; metaphysics engaged almost exclusive attention.

"It was reserved to the times of the Reformation to originate another order of things. Classical learning had been recovered; Hebrew literature was generally cultivated; physical science made rapid strides. But there was much to unlearn, as well as to learn. The theology of past ages was a noble science, yet its very greatness blinded men to some of its defects. The popular expositions of Scripture were received on physical matters with almost unquestioned faith.

"It was not until the increasing light of science forced men's attention to the question, that theologians began to examine what the Scriptures really did say on scientific matters. For this the Greek and Latin versions were wholly inadequate. Except a version represented the original, word for word, it would be impossible to arrive at the exact meaning of the original words through the version. This, however, is impossible. No two languages agree word for word. Let us take, for example, our Lord's words: 'The wind bloweth where it listeth, and thou hearest the sound thereof, but canst not tell whence it cometh and whither it goeth: so is every one that is born of the Spirit.'—John iii. 8. Were we tied down to the use of one word as the representative of one in the original, we should be compelled to translate the latter clause, 'So is every one that is born of the wind!'

"Now, let us consider the application of this to the scientific explanation of the first chapter of Genesis. The opening words are rendered in the Septuagint, 'In the beginning God *made* heaven and earth.' The words translated 'without form and void' are variously rendered in other parts of the Bible, so that commentators had no power of comparing their usage in other places. They were thus cut off from any philological study of the chapter. Can we wonder that they made mistakes?

"At the present day we are furnished with helps to a degree and of a kind which never before existed. The principles of philology have been more carefully studied. Critical helps, of various kinds, are far more accessible;

science is more fully known; controversy has caused more accurate attention; and enlightened piety has been ably exercised on Scripture and science united."

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"It was the error of the Hutchinsonians to imagine that Scripture taught a system of scientific truth. They endeavour to educe this from the Hebrew words. It is as grave an error to suppose that the inspired writers were allowed to fall into error in their scientific statements.

"The fact is, that every scientific statement in Scripture is infallibly true. In examining those statements, we must consider the necessary character of human language. Human language can never be clearer than human thoughts. We have no means of ascertaining the essential nature of things. We know them by their qualities, powers, or appearances. In consequence, the words and phrases of all languages describe things as they appear. Sunrise, sunset, are names of phenomena. Everybody knows that it is not the sun which changes his place, but the earth which revolves. Yet the most accurate scientific works retain those names.

"When God addresses man, he speaks to him in human language. Were he to do otherwise, men could not understand Him.

"We are on this principle to interpret the scientific statements of Scripture as we would those of any

ordinary treatise on science. In so doing, we shall find a most wonderful accuracy; and not only so, but a fulness of information which will amply repay study. The words are everywhere most happily chosen; the application of scientific truth is full of Divine wisdom; and the devout, scientific student of his Bible will find that holy volume full of most interesting suggestions.

"The true relation of Scripture to science is that of accurate illustration, not of systematic teaching.

"In the scientific explanation of the Word of God, there is a close analogy with that of the works of God. In both we have the principle of phenomena; the latter in things, the former in words. The language of phenomena in nature is, that the earth is at rest, and the sun moves: so in the Bible, the sun rejoiceth as a giant to run his course. In proportion as our scientific knowledge increases, we correct our first impressions of the phenomena of nature, we do the same with regard to the interpretation of Scripture. This no more implies any real uncertainty as to the meaning of the Word of God, than it does as to the meaning of the works of God.

"In this point of view, science and the Bible mutually illustrate each other. 'He hangeth the earth upon nothing' would be almost unintelligible until the true position of the earth was known. That the sun and moon are not self-luminous bodies, but fountains or lamps of light, was the statement of Moses long before science conjectured it.

"Again, bearing in mind that science is not systematically taught in Scripture, we are only to look to

it for isolated suggestions and accurate descriptions of phenomena. Their value will be increasingly appreciated as Scripture and science become more accurately known.

"He who inspired the sacred writers was well acquainted with natural science, and has left the impress of his omniscience in his Holy Word."

The Rev. Doctor, in other portions of this valuable Work, gives us many illustrations of unseen and undeveloped Scientific truth, in the exact meaning of Hebrew words, or the roots from which they are derived. I will give a few of the least known of these as examples:—

"Moses uses the word YAM for the *sea*, and THEOM for 'the deep.' *Theom* means literally 'the agitated, broken-up mass.' Could science invent a more accurate name to describe the strata of the earth's crust?"

"The word for *rock* is TZUR, from *tzur*, 'to press.' Whence did this name arise, if not from the geological observation that all the aqueous rocks are formed by pressure?"

"We read in Genesis—'Thus the heavens and the earth were finished, and all the *host* of them.' The word 'host' is TZABA, 'a beautiful organization.' A multitudinous aggregation would not be a host. An army is only a host, in the Hebrew sense of the word, when it is well organized. The most recent researches in Astronomy have brought out the possibility [*probability*] that all the stars of heaven are one grand organization."

"The word which Moses employs for *lights*, (the two great lights, Genesis i. 14,) is MEOROTH, '*lamps*,' which is rightly rendered by the Greek translators '*phosteres*,

lamps.' [And where it is rendered by our translators, he 'set' them in the firmament, the word used is] NATHAN, 'he gave;' that is, God gave to them the function of giving light in the firmament."

The few who now profess to be believers in Scripture, and yet, in spite of the facts of Science, hold firmly to the opinion, that God has really declared in His Word that the whole Universe was created in six days, some six or seven thousand years ago, had better, perhaps, be *left* to reconcile the Books of Nature and Revelation by such fanciful interpretations of either, as may best suit their own taste. Among the earnest investigators of, and believers in, both these Books, opinions, however, differ as to the proper mode of reconciling the two.

One of the earliest theories adopted, was that which made the *days* of Creation indefinite periods. At first, this idea seemed to be sustained by geological investigation: but, as investigation became extended, it was found that though there was *something like* agreement between the Creations of the geological *periods* and the Scripture *days*, that agreement was not so exact as we have a right to expect between the *facts* of *Nature* and the *Word* of *God*. This want of more exact accordance caused nearly every one, at all eminent in the Science, except the late Hugh Miller and Dr. Lardner, to give up the theory. One fact too, which seems to have escaped attention, appears to my mind the most important of all. The creatures called into existence during the *periods* became extinct: the creatures called into existence during the *days* were

made to be man's contemporaries; and placed under his subjection.

The idea, first thrown out, if I mistake not, by Dr. Chalmers, that Moses does not fix the date of the original Creation; but that there may be a chasm of indefinite ages between the first and second verses of Genesis, is now generally adopted. But the stream which thus originally gushed from that thought-fountain in the north, has divided into two separate branches. The one may be called the system, or theory, of Dr. John Pye Smith, that the Mosaic history is only the history of transactions which took place in one out of many centres of Creation, being limited to a small portion of Asia—the other, that it is a history of the last general collocation of the earth.

Of Dr. Pye Smith's learning and attainments, there cannot be two opinions; but I think he erred in being *over-candid*. Indeed, a personal friend told me it was his boast that the Infidel should never say he had not yielded *all* that could be reasonably demanded. In doing this, he seems to have yielded much more than Science required; for all the later discovered facts lead to the conclusion, that the Mosaic history must be taken rather in a literal than a figurative sense; as the last Chapter of *this* Work will, I think, abundantly make manifest. Indeed, if any one, with the discovered facts of Geology before him, were to attempt to write a *brief* description of the state of the earth just before the Creative fiat was reëxercised, some six or seven thousand years ago, he could not use words more graphic, or more exactly accordant with fact, than those which Moses employs.

APPENDIX B.

PRUSSIC acid is produced not only by the bitter almond, but also by the stones of plums, cherries, peaches, &c.; and, in minute quantities, by the pippins of other fruit: yea, even the fragrant odour of the *Narcissus Poetica* will, in a closed apartment, afflict susceptible persons with headache. Yet it would appear that the deadly poison is not an essential part of that delightful aroma, which is generally so grateful to the smell and taste. Observing in the Apothecaries' Hall, Birmingham, a bottle of essential oil of bitter almonds labelled "innocuous," and scarcely able to credit the fact, when I found it had all the fragrance which vegetable life obtains from a mixture of hydrogen and cyanogen, I applied to Dr. Henry Medlock, the analytical chemist of the General Apothecaries' Company, for an explanation; to which application he kindly sent me the following reply:—

"Dear Sir,—In reply to your note just received, I have the pleasure to inform you, that the essential oil of bitter almonds of commerce contains in solution a large quantity of '*prussic acid*,' which renders the oil exceedingly poisonous. It has been found, that the fine flavour of the oil is in no way dependent on the presence of the

prussic acid, which rather injures the aroma. Pure oil of almonds is as innocuous as any other essential oil. It is now customary to separate the prussic acid from the oil; and this is accomplished by distilling the essential oil containing prussic acid, with *hydrated oxide of mercury*. The oxide of mercury decomposes the acid, forming [by combination with its own components] *water* and *cyanide of mercury*. The latter remains in the retort, while the water and pure essential oil passes over."

It thus appears that hydrogen and cyanogen, as combined by the powers of vegetable life, have nothing of the deadly principles of hydrocyanic-acid, (prussic acid,) unless combined with a certain proportion of oxygen, which, as its name imports, is the "*life-generator*:" and that which is usually the generator of *life*, thus becomes, in its combinations, the source of certain and immediate *death*.

APPENDIX C.

THE various metallic ores which are discovered in the crust of the earth, whether they are found in "nodules," "veins," or "noggets," generally give tolerably clear evidence of having been deposited in water. And, now that the elaborate researches of MM. D'Orbigny and Eli de Beaumont have established the fact, that the different convulsions which have separated one geological era from another have been caused by the throwing up of mountain chains, it may be an interesting subject of investigation for some future Geologist, whose time is less occupied, and whose hair is less grey than my own, what kind of metallic impregnation was thrown out by each of these several eruptions from beneath. Our present sea-water is impregnated with silver. Silver has been obtained from it; but not in sufficient quantity to pay for the *working* of such a mine. Yet it is very probable, that, by means of some electrical or other processes, it is now depositing silver, or silver ore, in some of its dark recesses. And there might—as this is a utilitarian age—be some *utility*, as well as interest, in the inquiry I have suggested. For it would be a guide to mining operations,

or a clear suggestion to desist from them in certain cases, if it could be established, with a higher degree of certainty, that at the period when the different strata were being deposited, the sea possessed any peculiar metallic impregnation, — as it appears to have been impregnated with clay and iron after the throwing up of the Vosges.

APPENDIX D.

That the form of the American Continent confers inestimable benefits on the North of Europe, by directing the "gulph-stream" to its shores, and thus raising the temperature of the atmosphere, is a fact now almost universally known. And, since Physical Geography has become a *fashionable* study, nearly every tyro could point out the peculiar advantages resulting to different countries from the form of their coasts, and the position of their mountains. There is, however, so valuable a passage on the *general* uses of mountains in Dr. Macculloch's work —"Proofs and Illustrations of the Attributes of God, from the Facts and Laws of the Physical Universe,"* that I do not hesitate to copy it in full. It is as follows:—

"If it has been the plan of this work to point out examples of Design in every department of Creation, instead of confining itself to the usual narrow range, it seems especially necessary to attempt this in what

* My attention was first called to this valuable and now scarce work of his deceased friend, by the Venerable Prelate to whom the present Volume is dedicated; and who had some difficulty in procuring me a copy.

relates to the structure and disposition of the earth. If this has been little noticed, it has not even been understood by former writers on Natural Theology; and it would be culpable to permit anything to be considered as a work of chance or imperfection. That a writer of such eloquence and ingenuity as Burnet should have declared this belief, is not a small additional reason: since such opinions spread, even among those who may never have heard the name of their author.

"I shall not quote an estimable man for the purpose of displaying his errors more distinctly: while I only repeat what has often been pointed out, when I commence by saying, that it is to the existence of mountains we owe the springs and the rivers so essential to all life, and even, in a great measure, the very rains by which they are fed, and through which vegetation exists. It is very widely through the influence of mountains, or elevated lands, that the clouds are caused to fall in rain: and here also we may remark the subsidiary provision made by this law. Such lands become speedily drained and quickly dried, to the obstruction of their vegetation: and it has thence been ordered that the vapours should collect especially upon and around them; while in thus primarily supplying themselves with the needful moisture, they also effect its distribution far and wide, through the aid of the winds.

"If philosophy has not yet proved that electricity is here the immediate agent, it is easy, in any mountainous country, to witness the operation of a mountain, not merely in collecting the existing clouds, but in forming

them from an atmosphere apparently free of all moisture. A transparent current of air begins to deposit vapour, as soon as it approaches the summit, increasing till the whole becomes involved in a cloud, as low down as the relative specific gravities of this vapour and the air permit. Often also such a cloud appears to be fixed, though a strong wind is blowing: but in this case, that which had been precipitated on the windward side, is dissolved on the leeward; explaining the apparent mystery of rest in the midst of motion. But the more frequent result is a progressive addition to the cloudy atmosphere, until the whole sky is obscured and descends in rain. And thus also, when the high land simply attracts the clouds which may be sailing through the air, its influence becomes a frequent source of rain, not on itself alone, but on all the surrounding country.

"But the wisdom of this provision will be rendered more impressive by considering those parts of the earth where extensive plains refuse almost all vegetation: while the contrivance for watering such countries through the winds, does not affect the general deduction. If we look at the great, arid, and almost barren deserts of Asia and Africa, it is but true that they only require mountains to render them what the equally extensive plains of South America are. Could we erect Chimboraco or Ætna in the Sahara, a wide tract would immediately become fertile; since, sands as these plains now are, and barren as they may be, nothing is wanting to them but water. The rock is that of Cheshire, and the soil is essentially

the same; it requires but a succession of vegetation to render it, not merely as fertile, but a thousand times more productive. Or, in as far as its barrenness may arise from the presence of salt, the cause of its brackish though rare waters, the rains of a few years would wash that far away from the lands, and convey it to the sea.

"And if in a future Chapter (xx.) I have pointed out the means by which Providence is daily enlarging the extent and increasing the fertility of the land, it is easy to see, that in one year, in one day, and by means through which He is ever producing vast and similar effects, He might convert, not the Sahara alone, but every desert on the globe, into habitations for man: render the sands of Africa what the declivities of the Atlas are, and cover the salt plains of the Caspian with the wealth of Caucasus. The volcano is the power in His hand: He has employed it in the Southern Ocean, almost before our eyes; but it has ever been His agent in this work, since thus did He form the hills and build the mountains: and by the volcano, terrific as is its power, and destructive as it may seem to those who do not scan His ways, might He produce a new world in the wilderness, for the ever enlarging races of man. And who can decide that this is not within the Creator's plan? Had man this power, he would, thus instructed, produce a volcano, and erect a mountain in every desert on the face of the earth: while he cannot be wrong in thus reasoning, since it is by the past conduct of God that he can alone judge of the future, as it is also his duty thus to inquire, under the views of natural religion.

"If the water which supplies the spring and the river might not have existed without the mountain, so, much more certainly, would not the spring itself: while geology must be called in to explain one of the inferior designs, comprised under that wider one which formed the rocks and distributed the mountains; since this is not merely a mechanical arrangement, like that under which the superficial waters are collected to flow in rivers.

"Those repositories and conductors of water are the produce of at least two very different dispositions in the solid substances which form the earth; while we cannot refuse to either, intention as well as wisdom, unless we deny all foresight and all final causes. That effects so valuable and so necessary are merely the result of accidents implicated in other arrangements, is but a minor degree of the same aberration of judgment which adopts a whole Epicurean system: nor can a sound reasoner be satisfied with such a solution, abstracting all religious considerations. That the several mechanical arrangements of the earth are not symmetrical and definite, like those of the animal structures, or the works of man, and have therefore an air of carelessness and neglect, does certainly, to the unreflecting, give them the appearance of accident; and thence it becomes more necessary to explain them, that the design may be seen and felt.

"The arrangement for the end in view, which is most obvious in England, depends on the stratification of rocks in parallel beds. A bed of chalk or clay, covered by one of sand or gravel, forms a single pair of strata; and

the lowest of these is impermeable to water. Thus the waters which pass through the upper, will rest on the lower one; or whether in this simplest case, or in that of a more numerous collection, the same effects will follow from the presence of fissures as from that of porosity. And it is obvious, that if water is thus reposited for use, and preserved from waste, so is it equally protected, in its transit to distant points, from that evaporation which would dissipate a superficial stream.

"If he who digs down to such a repository of water finds a well, it is evident that such a well could not rise to the surface, in a land of horizontal stratification. The inclination of the strata becomes the remedy: and if other valuable results are implicated in this arrangement, we cannot doubt that this is at least one of them, foreseen and ordered. Let the pair of strata here assumed, be elevated, and it is obvious that the water will rise, or flow, under a pressure proportioned to the vertical elevation, while the consequence may be a deep and springing well; or an open spring, should any fissure in the upper stratum afford exit to the water.

"But omitting the springs of obscure origin, as not belonging to the present inquiry, there are rocks, such as granite, which are not stratified, as there are also strata incapable of transmitting water in this simple manner. Yet is this great end not neglected: it is attained in a different way. Such rocks include systems of fissures; and thus equally become the conductors of water and the seats of springs, easily traced to these causes, in mines and in mountainous countries.

"In all cases, the further we can ascertain a train of causes and consequences extending backwards, the more effectually do we infer a plan, founded on foresight, and executed through a special preparation. In this instance, the original cause, through which this and so many other effects of the wisdom and goodness of the Creator are produced, is overwhelming in magnitude and extent of action; being no less than the total disruption or destruction of an earth, and the creation or arrangement of a new one. Be the other effects of this what they may, it is to these revolutions that springs owe their existence; for thus were both the fissures and the elevations of the strata produced. Will it be said that these, or even that the former, were necessary, not intended consequences? It is often difficult to answer this, as to the works of creation, so as to satisfy those who prefer denial or doubt: yet the mere metaphysical argument should suffice. Accident is but that of which we know not the cause: and it is especially thought accident, when we see no effect or purpose. In the present case we see both: and in all, as our knowledge extends, we discover that what we were used to consider accident, is part of some design, and is productive of good and specific effects. It is our ignorance which is in fault when we fail: here at least we are informed; and hence the conclusion of a special design, for an intended purpose, is inevitable. Yet we can also find an answer here, on purely physical grounds. It was not necessary that there should be any fissures, because there are many rocks

without them. It was not necessary that any fissures should be open, because many are so filled as to exclude the passage of water. And similarly, it was not necessary that the slightly inclined upper strata should any where be of such a naure, or so disposed, as to retain or transmit it, since that is very far from being a general occurrence.

"I need not dwell on that great and obvious consequence, which is partly implicated in the existence of springs, and partly dependent on the mere drainage of water along the surface. To point out the value of a river, or of a system of rivers, is superfluous. But let it be remembered, that but for that design which planned and raised a system of mountains, Egypt would be without its Nile, a barren and uninhabited desert; that the interior of English America would now, and perhaps for ever, be a wilderness of forests and marshes, if it were even that, inhabited by wild animals, and by men without civilization or the hope of it; that the wealth of commerce, with its enormous effects in the general improvement of man, would have been as nothing, compared to what it now is; and that without the power which rivers and their results give to internal, as well as to external communication, even the agricultural affluence which now exists would have been cramped within very narrow bounds. The canal itself is dependent on the river; and but for the mountains of Switzerland and Germany, Holland and all its wealth could scarcely have had an existence. And for all this, as for far more,

the earth, man, is indebted to what has thoughtlessly been esteemed a deformity on that earth's surface; and further, to that subversion or destruction, which, while deemed by the same persons a result of the Divine vengeance, an act of punishment, a pure and unmitigated evil, is not less striking as an act of wisdom and beneficence than of incomprehensible power.

"But geology can point out so many other important consequences flowing from that design which covered the surface of the globe with mountains, that even all the preceding great results might be neglected, without affecting the general conclusion. In these is laid that great fundamental provision through which is produced the soil that forms the home of vegetation and the foundation of life; as through them also, it is provided, that what is incessantly carried away, yet removed but to produce similar good in other places, shall be renewed. And if it is to the system of mountains, or the elevation of land, that we owe the descent of the rains and the whole machinery of the circulating waters, so does this, as a primary and useful effect, become the immediate cause of the renewal of the soil; renewing also, as it removed. Thus beautifully, and often thus simply, are the trains of successive causes and effects laid and implicated all through creation.

"Considering, therefore, under this specific and limited view, that mountains are mere provisions for eventual soil, stored up by the Creator for the production and the perpetual renewal of the agricultural surface, we find tha'

they are formed of the earths whence those soils are produced, but, under a subsidiary provision, condensed into the form of rocks. It is an obvious, as it must have been an intended consequence, that the supply of those earths is gradual, or proportioned to the wants; while a long duration of that supply also follows, from this established durability of the whole system by which the waters of the globe are circulated. And to this power of resistance is opposed one of destruction: slow, as it ought to be, in consonance to the general intention, yet certain and unfailing: the whole presenting that nice and beautiful balance between the active and the passive powers, which, while it ever produces the intended results, excites our admiration, under its apparent difficulty, the ostensible rudeness, carelessness, and irregularity of the proceedings, and the unfailing useful effects.

"The initial proceeding depends on that great agent, chemistry, to which so much more has been committed: but I must confine myself to a single chemical action and a simple case. In the basaltic rocks, a large portion of iron is combined with indurated clay, while this substance is the parent of the most fertile soils. That iron is united to oxygen, under a definite bulk; but when exposed to the atmosphere, it absorbs carbonic acid, forming rust, and thus increasing its dimensions, so as to disintegrate the compound of which it forms a part. The texture of the rock becomes therefore destroyed, or is reduced to clay: while this decomposition is necessarily gradual, and must also proceed as long as the rock shall

last, or a mountain shall remain. But that which chemistry has commenced, is continued by mechanical power; that power being the descent of water, under the force of gravity; while the prime design, consisting in the elevation and distribution of the land, determines the nature and extent of this action. And thus we perceive more distinctly the beauty of a design, which elevated the mountains far above the level of the plains, that the force of gravity might act readily in the distribution of the earths which the rocks are ever producing, and that it might also continue to act through a long coming period.

"If the naked rock was first covered with soil in this manner, thus is the existing soil for ever renewed, as it is for ever removed. And if every shower washes down to a lower level that of the upper ones, the same effects, on a larger scale, are seen in the turbid enlargements of rivers, where the act of deposition is familiar, as its consequences are experienced by every possessor of lands situated in their vicinity. And it is plain, that under such a system, the upper lands would soon become naked and barren, were it not for the chemical provision, which I have pointed out; since it is under this power, chiefly, if not solely, that the rocks constitute the fountain of a perpetual supply. The effects of frost indeed must be viewed as mechanical: but I need only name a fact so familiar, as I need not also state the other chemical causes of the decomposition of rocks.

"The production and renewal of soil are, however, far

from being all of the effects resulting from the great design which laid the mountains: effects intended, as they are attained. I have indeed described those in a future chapter (xx.): but the purpose of the present one demands at least a notice of them here. Hence is the earth enlarged, by the formation of alluvial plains and the exclusion of water; and hence also is its fertility perpetually increased: since these are the points of rest which receive the best transported soils from the upper lands, forming those tracts of supereminent wealth which are so well known all over the world. Still further, so admirably arranged is all in the system of creation, that we trace, in the same Design, provisions made, not only for the welfare of the present earth, but for the creation, or resuscitation, of a future one; of many future worlds. If it has been said, that although matter is perpetually changing its forms, nothing is changed but for the sake of renovation, the present case offers a beautiful illustration, and on the most magnificent scale, of that great law which seems to have placed the stamp of a future eternity on the works of God, and has perhaps tempted injudicious reasoners to view creation as equally eternal in the past. If the plant dies but to give life to other plants, if man himself is replaced by man, through his successive generations, so does a whole Earth waste and die, that another and a better may arise from its ruins. Even now, the germs of a future earth are preparing beneath the ocean, to rise in new beauty when He shall speak the word; again probably to die, yet that it may give birth

to a better and a fairer. And this too is a portion of the Design, under which the present mountains were laid; as, but for that contrivance of profound wisdom and inconceivable power, so thoughtlessly contemplated or so ignorantly condemned, not even the globe which we inhabit could have had an existence. From the moment when it first sprung forth from nothing, its formation has been intrusted to mountains; at every successive stage, the mountains of a preceding earth have generated a new one; the mountains have been His agents and servants in the work of creation; but it was His wisdom that planned them, and His hand that formed them.

"If views of the utility of mountains, so extensive, and so demonstrative of design and wisdom, have almost superseded the necessity of further illustrations, I must still point out some other uses, various in importance, as some of them might possibly also be referred to contingency rather than design. I must however leave the question of contingent results to the feelings of others: being satisfied, myself, that there can be no contingency under boundless knowledge and wisdom.

"It is an equally important and extensive consequence of the system of mountains, that, through them, the Creator has effected an equalization of temperature between the equatorial and the polar regions of the globe. This is one of those examples of Divine wisdom which especially deserve notice, from the unexpectedness of the means by which the end is attained: means not to have been devised or foreseen by man, and founded on

a chemical law, on one of His peculiar contrivances, of which this is the chief use, and may, for aught we yet know, be the sole one.

"From the very nature, or necessity, of the earth's position and motions, the distribution of light and heat to its several regions must have been unequal; and hence the tropical portions, exposed to a more nearly perpendicular sun, are hotter than those which approach to the poles. Thus, if the equatorial climates are not uninhabitable, as the ancients supposed, they are still often inconvenient dwelling places for man, numerous as are the compensations that have been provided. Yet the wealth of their vegetable produce causes man to brave them: while, unquestionably intending this, it remained for the Creator to invent and apply one great compensation, as a remedy for that arrangement of the earth's form, position, and motion, which was inevitable, and which would otherwise have defeated His intentions.

"This has been effected by the appointment of mountains to those regions, in the first place; adding to that a subsequent contrivance, or law, namely, that a certain elevation above the sea shall produce the same diminution of the sun's heat as a certain distance from the equator does; or, that a small vertical line shall correspond to a large horizontal distance from the main point of the solar action. And it is a further contrivance of wisdom, that a very small vertical altitude should suffice; since, had the law of the vertical diminution of heat been materially different, mountains of an inconvenient altitude

would have become necessary. I need scarcely perhaps say, what is well known respecting this law, namely, that if a certain curved line be drawn round the earth, touching it at the poles, and departing from it at the equator, that line, which philosophy has defined with tolerable precision, will represent a continuity of the polar climate, or of the never-thawing temperature of water.

"Thus has the Creator ordered: and knowing this great fact, man might have suggested the remedy which produces such extensive and valuable effects on the great American continent; or he might have proposed the chain of the Andes as the means of producing, in one narrow spot, all the climates of the globe. But the Design of the Creator would be proved by the very suggestion: while if we are still ignorant of the essential and fundamental invention, in this law of heat, or if the highly improbable effect is, that the nearer we approach the sun, from the general level of the earth, the less is the heat, we must equally admit profundity of invention, under wisdom and power. That this law, or this restriction on the ostensibly inherent properties of the sun's rays, was made for this sole purpose, we cannot indeed affirm; but though other purpose should be served, the general conclusion would not be affected; knowing, as we do, that under the designs of the Deity, many ends are often obtained through one invention or law.

"I may proceed to a great system of uses derived from the same design, coming under the particular cognizance

of geology. And if uses imply a final cause, and therefore an intention, while the means of attaining them, or the invention, is also apparent, I need not repeat the conclusion as to designing Intelligence.

"A large portion of the rocks of the accessible earth is disposed in strata, following, or piled on each other, in a long succession, while many different substances occur among those, and certain orders of arrangement also exist among them. Geology easily proves that these strata were originally formed in a horizontal position: as, seeing the present succession, in new positions, it also knows those which at first occupied the lowest places in the total mass. Now, had those rocks remained as they were first deposited, a very few, or, in many places, but one alone, could have been found at the surface; and thus our knowledge of the structure and materials of the earth would have been very limited, with the consequence of diminishing the range of uses we now derive from it. If it is through the system of mountains that we have attained our present information, the largest portion of that is derived from the elevations and displacements of the strata.

"The specific evils that would have followed a horizontal position are easily understood. Slate could not have been reached, except through a shaft traversing all the strata above it: and thus also extreme labour and difficulty would have attended, or perhaps impeded, the working of coal, with evil consequences that need not be pointed out. Or rather, man might never have known,

or even suspected, the existence of those valuable substances, as of many more, without which he could never have been what he is, and not even the moral being for which he was designed. Under the wisdom which erected the mountains, they occupy every possible angle: the interior structure of the earth is disclosed, to depths which no human labour could ever have reached; the surface of the soil is the bottom of the mine; and through comparatively trifling labour, we command the materials which have been prepared for our use, as our knowledge enables us to calculate our plans with accuracy, and to discover even that which is invisible.

"It is a subsidiary good effect of the proximate cause which elevated the mountains and displaced the strata, that it has formed two useful products, in the unstratified rocks; thus enlarging the general view of design under the contemplation of final causes. Granite and its value are too well known to require more than a bare mention. And if the basaltic rocks are especially adapted, in every manner, for the production of soils, so do we find that they have been created after even the latest marine strata, by a separate and peculiar process: brought up from the depths of the earth in a state of fusion, and placed in positions where their stores of eventual soils could most easily be brought into use."

The above remarks, it should be remembered, were written at least 27 years ago. Since that time, experience has confirmed what then were only theories; and extended

observation has enlarged our views of God's wisdom and benevolence, as exhibited in *all* the irregularities which the land surface of our world presents. Years after that time, too, Sir Roderick Murchison was led, by analogy, to the conclusion, that Central Africa was not the uninhabitable region which it was generally supposed to be; but would be found sufficiently furnished with upland, and with water, to constitute it a fit dwelling for man. And this philosophical anticipation has been more than realized by the discoveries of Dr. Livingstone, to whom the world, and the Church, are so much indebted for the additions he has made to our knowledge of Physical Geography, and of the evidences of God's wisdom and providential care.

END OF APPENDIX.

WORKS BY THE SAME AUTHOR.

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"We have here to notice the arising of another poet among the people —another of those ardent spirits in whom narrow circumstances and unceasing labour have not been able to quench utterly the spark of living fire, nor wholly to silence that voice whose speech is not to be mistaken. Where he is not didactic or argumentative, our poet is smooth and nervous in his verse, with an enthusiasm which can neither be put on or *got up.* There is a certain freedom in the use of language, too, which is a sign of good promise."—*Athenæum.*

"I might be tempted to hazard my reputation (as a critic, at least,) by saying that no poem equal to this has been given to the public since 'The Course of Time.'"—*James Montgomery.*

It will be a deep disgrace to the religious public if a work like this fails to secure the most extensive encouragement."—*Eclectic Review.*

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"Mr. Ragg has manifested the possession of talents equal to those of the titled author of 'Childe Harold."—*Gospel Magazine.*

"The poetry is of an high order, always correct in its versification, often most elevated in sentiment. It is well worthy a place in the library of every Christian."—*Derbyshire Courier.*

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'Sketches from Life' are some extremely touching. We select for quotation, although somewhat long, 'Burnt Row,' a tragical incident, simply and pathetically narrated in the fine old ballad style."—*Ward's Miscellany.*

"'Caradoc' contains passages of truly splendid poetry."—*Metropolitan Magazine.*

"The Poem entitled 'Night' especially evinces great power of thought and singular beauties of expression."—*Literary Gazette.*

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